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OF SURGICAL SCIENCE AND PRACTICE

EDITED BY

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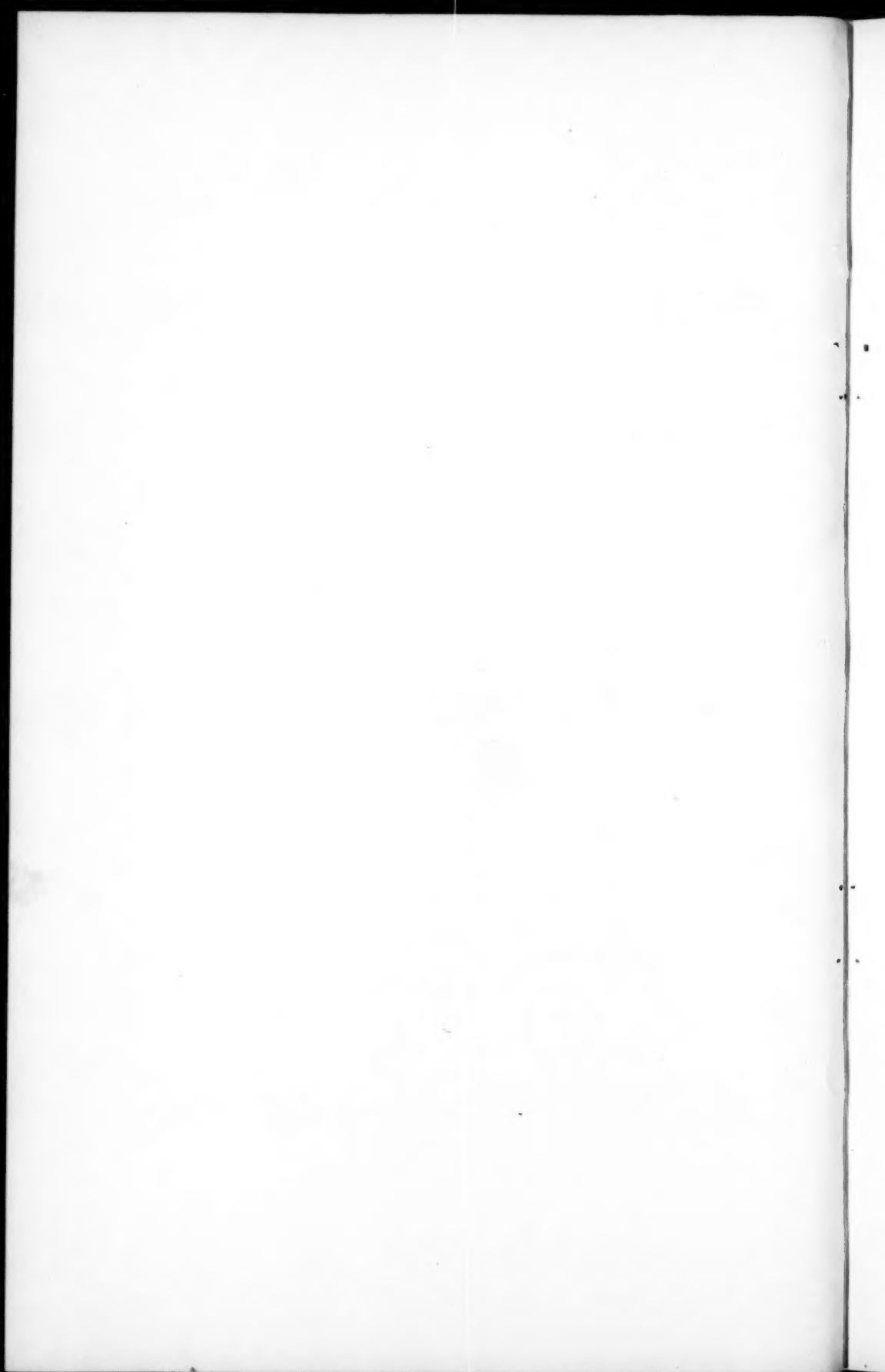
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ANNALS OF SURGERY.

STRETCHING OF THE FACIAL NERVE. REPORT OF A NEW CASE, WITH REMARKS AND A SUMMARY OF PREVIOUSLY REPORTED CASES.¹

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CASE. *Right facial spasm for 5½ years: Resection of right infra-orbital nerve, with temporary relief: Stretching of the facial nerve: Cure, with paralysis of the face, up to date of report.* (Reported by Dr. Ella S. Webb, Resident Physician at the Woman's Hospital of Philadelphia).

MRS. A. S., native of England, æt. 48, 4 ft. 7¼ inches in height, weighing 138½ lbs, and by occupation a housekeeper, was sent to Prof. Keen's clinic at the Woman's Hospital, April 1, 1886, by Dr. Wharton Sinkler, with the following history:

Family: Mother died of dropsy at the climacteric. Father died of inflammation of the stomach. Two brothers were killed in the war. One brother living but not in good health.

Personal: Had nervous trouble when she was a child. Was paralyzed, and unable to walk until she was six years old, when she was brought to this country, and the sea voyage seemed to restore the tone of her nervous system. When 12 years old was again troubled with loss of nerve power; could not hold anything in her right hand. This condition yielded to remedies in a short time.

The menstrual function was established at 16 years of age. The periods have always been accompanied by a profuse discharge, and a good deal of pain; they were always regular until about five years ago, when her nervous trouble began, since which time they recur every

¹Read before the American Surgical Association, April 1886.

two or three weeks, accompanied by an exaggeration of the nervous twitching and pain in the head.

From the age of sixteen until five years ago had no recurrence of nervous trouble, was always healthy, except an occasional sick headache, and twice an attack of chills and fever.

Was married at eighteen years of age, and has had ten children, nine of whom are living. Six months after the birth of the youngest, now nearly six years old, she noticed a drooping of the right upper eyelid, and soon after a twitching of the under eyelid, and the eyeball was quite blood-shot. Was under treatment for some time without relief. In less than six months the entire right side of the face and the right platysma-myoid twitched constantly; the angle of the mouth was drawn down and there was constant pain in the head. Talking, eating and indeed any physical or mental effort increased the spasms. The twitching of the cheek against the teeth made it sore, and the cheek was often caught between the teeth in mastication, so that she had all the teeth in right half of the mouth removed without any good effect. She has been under Dr. Sinkler's care from July 23, 1883. Galvanism has been faithfully used as also other remedies such as conium, gelsemium, cannabis Indica, eserine, nitro-glycerine, iodide of potassium, etc., with no permanent effect. Conium had marked influence on the tic when pushed to full doses, but soon lost its effect. Quinine would relieve the pain in the head when severe. April 25, 1884, pain in the right leg began, and at times there was pain in the back of the neck and arms. February 2, 1885, she complained of twitching in the right leg.

In June, 1884, the right infra-orbital nerve was resected by Dr. T. G. Morton. About half an inch was cut out. This was followed by a cessation of all the twitching of the muscles, and the pain in the head was relieved. This relief continued a few days but by the end of six weeks all the twitching returned, and, in addition later, a twitching of the right side and leg. Dr. Sinkler now had her sent to have the nerve stretched, as we had agreed would be proper.

Physical Examination. Lungs—Vesicular murmur good. Heart—Mitral regurgitation—murmur heard at the apex and in the axillary space.

Urinalysis. Specific grav. 1028. Color, yellow-white—white deposit. React. strongly alkaline, no albumin, no sugar.

April 1, 1886. *Present State.* Entered the hospital in condition before described. The nervous twitching increased when she was addressed or when she tried to speak. Whether her face twitched during sleep could not be determined as she awakened on the slightest noise. Given an oil injection in the afternoon in preparation for the operation.

April 2, 1886. Bowels loose, did not sleep very well through the night. *Operation.* Began etherizing at 1 o'clock, April 2,

Dr. Sinkler present and assisting. At 1:10 an angular incision was made $2\frac{1}{2}$ inches long. The centre of the incision was at the apex of the mastoid process, passing upward behind the ear, and downward in a line parallel with the border of the sterno-cleido-mastoid muscle. Ligated the posterior auricular artery. The parotid was dissected and pushed forward till the prevertebral muscles and their aponeurosis were reached. A very weak current of electricity was then applied by a wet sponge to the cheek and a fine wire to various points in the wound until the nerve was found. Immediately a spasm of the facial muscles followed the application. The nerve was then laid bare. A hook was next passed under it and the nerve stretched several times from the face outward, pulling the head over to the right side. When the nerve was stretched, marked contraction of the facial muscles was seen. The force used was estimated at between four and five pounds. No more force was used because a few fibres were felt giving way when an attempt was made to lift the head. Horsehair drainage was used and four silver sutures were introduced. Complete paralysis of the facial muscles was noted after the stretching and before she had recovered from the ether. Upon recovering consciousness the patient remarked the absence of pain in the head.

Before the operation pulse 90, temperature 98.8° . After the operation pulse 82, temperature 98.6° .

A carbolized gauze dressing was applied and the operation was completed at 1:50 p. m. On coming out of ether she had four nervous chills. Was given a 5 gr. assafoetida suppository which quieted her. Took a dessert spoonful of milk or beef tea every twenty minutes or half hour through the afternoon. At 6 p. m. complained of severe pain in the ear, which soon passed away. At 7 p. m. vomited, otherwise retained all nourishment. Took short naps through the afternoon and evening. After operation there was complete paralysis of facial muscles. The right eyelid did not close of itself. Slept very well through the night, snoring loudly.

April 3 (1st day after operation). 6 a. m. pulse 77, temp. 99.4° . Paralysis of facial muscles not so marked as immediately after the operation. No pain in the head, but complaining of a soreness in the right side of leg, which was rubbed with liniment. Took from half an ounce to an ounce of milk every hour, with some coffee. At 1 p. m. pulse 86, temp. 100.4° . Gave 4 grs. quinine. The wound was dressed at 2:30 p. m., slight oozing was found on the dressing. At 4 p. m. pulse 96, Temp. 100.4° . Felt very comfortable all day and slept soundly all night.

April 4 (2d day). 6 a. m. pulse 85, temp. 98.6°. Took more nourishment at longer intervals. Had no pain in the ear. 4:30 p. m. pulse 81, Temp. 99°. Leg and side still painful, rubbed with liniment.

April 5 (3d day). 6 a. m. pulse 85, temp. 98.7. Slept very well through the night, did not snore as on previous nights. Eyelid nearly closed, and facial muscles seem a little less relaxed than before. There has been no twitching of the facial muscles or platysma or leg since the operation. Sat up with bed-rest for an hour in the morning and for twenty-five minutes sat in rocking-chair in the afternoon. 4:30 p. m. pulse 80, temp. 98.6°.

April 6 (4th day). Temp. 98.4°, pulse 76. Hunyadi water for slight constipation. Out of bed. All the stitches removed this afternoon and the horsehair drainage—a few drops of sanious discharge followed. Bandage removed and adhesive plaster applied. Evening temp. 99.6°, pulse 74.

April 7 (5th day). Temp. 98.8°, pulse 73. Complained of pain behind her ear. There was a little discharge through the night. Applied a compress of absorbent cotton with iodoform sprinkled upon it.

April 8 (6th day). A. M. temp. 98.4°, p. m. 98.4°. Very little discharge.

April 9 (7th day). A. M. temp. 99.9°, pulse 73. Able to masticate. Given an enema. Bowels moved. Evening Temp. 99°.

Was taken unwell. At this period previously the twitching of the face and also of the right side and leg, as well as the pain, were always much worse. All of these are now entirely gone. Neither twitching nor pain are present anywhere.

April 10 (8th day). Discharged well.

April 27 (25th day). No twitching or pain. Still complete paralysis though the eye can be nearly closed.

[June 18, 1886, 2½ months after the operation, I can report the case still cured. The facial palsy is beginning to disappear, and the face has nearly regained its normal expression.]

I append the following electrical examination made with great care by Dr. G. Betton Massey.

"The undermentioned muscles of expression of the right side of the face were examined on the tenth day after you had operated, that is, on the 12th of April, and also on the seventeenth and twenty-fourth days after operation. A control examination was at the same time made of the sound side for comparison, and the figures found are placed in the table as the normal formula of each muscle.

Farado-contractility was found greatly weakened on the tenth day, and totally abolished on the seventeenth. The galvanic responses tabulated below were noted with great care, all errors from changes in resistance being eliminated by the use of a milliampere meter (Barrett's). They were those produced by the minimal current strength at closure of the circuit.

It will be noted by a reference to the table that the frontalis showed the serial change indicative of reaction of degeneration in a slight degree on the seventeenth day. This remained the same on the twenty-fourth, when slight modal change, consisting of a slow wave-like contraction instead of a sharp, quick one, was noted. The orbicularis palpebrarum showed quantitative diminution of excitability on the tenth day, and serial change on the seventeenth. The levator labii superioris showed slight serial change on the tenth day, which has increased since, amounting on the twenty-fourth day to more than a complete reversal of the normal figures. This was true also of the zygomaticus major, orbicularis oris, and levator menti, in all of which increasing serial change has been found, together with great modal alteration of contraction. The lower muscles of the face show greater change than the upper.

Minimal	Contraction at		Remarks.
	Kathodic Closure.	Anodic Closure.	
Frontalis { Normal	1	1 1-2	Slight modal change.
10th day	1	1 1-2	
17th day	1 1-2	1	
24th day	1 1-2	1	
Orbicularis Palpebrarum { Normal	1-2	1	Slight modal change.
10th day	2 1-2	3	
17th day	2	1	
24th day	2 1-2	1 1-2	
Levat. Lab. Superioris { Normal	2 1-2	3	Modal change
10th day	2 1-2	2 1-2	
17th day	4	2	
24th day	3	1 1-2	
Zygomaticus Major { Normal	2 1-2	3	Modal change. Great Modal change.
10th day	2 1-2	3	
17th day	5	3 1-2	
24th day	2 1-2	1 1-2	
Orbicularis Oris { Normal	2 1-2	3	Slight modal change. Great modal change. Great modal change.
10th day	2 1-2	3	
17th day	1 1-2	1 1-2	
24th day	1 1-2	1 1-2	
Levator Menti { Normal	2 1-2	3	Great modal change. Great modal change.
10th day	2 1-2	3	
17th day	1	1 1-2	
24th day	1	1-2	

The subsequent history, with the later electrical changes, I shall report at future meeting of the Association.

REMARKS. The operation of nerve stretching was first introduced by Billroth and Nussbaum in 1872. It has been done only twenty-one times upon the facial nerve so far as I have been able to ascertain. Five of these cases have been done in America (Putnam two, Gray two. My own is the fifth.) Of these 21 cases I append the following summary ;

STRETCHING OF THE FACIAL NERVE.

7

TABLE OF THE RECORDED CASES OF STRETCHING OF THE FACIAL NERVE.

No.	Reporter and Method.	Reference.	Date.	Sex, Age and Side.	Duration of Disease.	Supposed Cause.	Temporary Result.	Final Result.	Remarks.
1	Baum. (Baum's method.)	Berlin. Klin. Woch. 1878. No. 40. p. 595.	July 20, 1878.	F	L 6 years.	Epileptic fit.	Paralysis disappeared in 1-2 hours, cure for 8-9 months. Slight return after 8-9 mos., another later. After 2 years so nearly well as not to need a second operation.	Great improvement 2 years after operation.	Right side occasionally twitched.
2	Bernhardt (Hahn operated. Baum's method.)	Zeitschr. f. Klin. Med. 1881. p. 96.	Nov. (15,) 1878.	M 36	R 5 years.	?	No paralysis resulted; twitching returned next day. After 2 years all in all some improvement, then free for hours, at times active movements. Improvement not sufficient to encourage him to undergo a second operation.	Some improvement 2 years after operation.	Pain preceded the spasms for 2 years. No electrical difference on two sides.
3	Schüssler. (Baum's method.)	Berlin. Klin. Woch. 1879. No. 46. p. 684 and Godlee's table in Tr. Clin. Soc. XVI p. 227.	Jan. 23, 1879.	F 39	L 8 years.	?	Paralysis for 6 weeks disappearing at 12 weeks. Slight return after 6 mos. and growing worse, but in nothing like the previous severity.	Some improvement 6 months after operation.	
4	Eulenberg. (Huetter operated. Huetter's method.)	Centralbl. f. Nervenh. No. 7. 1880, and Godlee's table	Dec. 2, 1879.	F 27	L 2 years.	?	Paralysis for 3 months, then slowly disappeared and as it disappeared the twitchings returned but never so violent as before.	Some improvement 3 years and 2 months after operation.	Chiefly sudden and severe blepharospasm extending to left side of face and slightly to right side, also to some spinal accessory muscles and flexors of hand and fingers. Schirmer had stretched and divided left supra-orbital nerve without result. Pos-

									ter, auric. nerve not paralysed by Hueter's operation. Reaction of degeneration. Loss of taste in left ant. half of tongue for fifteen weeks.
5	Putnam. (Baum's method.)	Archives of Med. N. Y. Feb. 1881.	April 24, 1880.	M. 25.	R. 3 years	?	Paralysis disappeared after 3 months. Spasms returned after nearly a year.	Unrelieved nearly a year after the operation.	Reac. of degen. had begun on 4th day when first examined electrically, but this disappeared after 9 months.
6	Bernhart. (Langenbeck operated Hueter's method.)	Zeitschr. klin. Med. 1881, p. 99.	June 18, 1880.	M. 21.	L. 4 years.	Cold.	Complete paralysis 3 days. Nearly gone in 3 months. Gradual return of spasm thereafter, but not so severe as before.	Somewhat relieved 4 mos. after operation.	Patient would willingly submit to a second operation as the paralysis was the lesser evil. Reac. of degen. Only branches to eye and upper face stretched.
7	Sturge and Godlee. (Godlee operated Baum's method.)	Tr. Clin. Soc. London. 1881. XIV p. 44, and XVI 1883, 229.	July 20, 1880.	F. 72.	R. 6 years.	Mental shock.	Paralysis nearly disappearing after 3 months. Slight unconscious twitching after 3 months. At end of 9 mos. following severe emotional disturbance entire return.	Unrelieved 3 years after operation.	
8	Southam. (Baum's method.)	Lancet. Aug. 27, 1881. Lancet. Apr. 10, 1886.	March 28, 1881.	F. 59.	L. 2 years.	Fright.	Paralysis disappeared at 16 weeks.	Cure after five years.	
9	Hoffmann.	Bernhardt's Deutsch. Med. Woch. 1882. No. 9, and Godlee's table.	March 28, 1881.	F. 35.	R.	?	Paralysis lasted to some extent till the fall of 1881. At this time while she was pregnant and after delivery spasms were worse, but then subsided (entirely?)	Cure or great improvement 25 mos. after operation.	Underlip and platysma branches too deep and were not stretched.

STRETCHING OF THE FACIAL NERVE.

9

TABLE OF THE RECORDED CASES OF STRETCHING OF THE FACIAL NERVE.—Continued.

No.	Reporter and Method.	Reference.	Date.	Sex, Age and Side.	Duration of Disease.	Supposed Cause.	Temporary Result.	Final Result.	Remarks.
10	Godlee [Baum's method.]	Tr. Clin. Soc. London. XVI. 1883, p. 220	Nov 10, 1880. Left nerve. March 24, 1881, right nerve.	M. 36. R.L.	3 years.		Paralysis of both sides; began to disappear after 12 weeks on each side. As control returned, spasms recurred.	Unrelieved 2 years after operation.	Left supra-orbital nerve was divided Sept. 13, 1881, for tenderness but without good result.
11	Navratil.	Chir. Beiträge S. 10. Quoted by Zesas; vide infra.	May 15, 1881.	F. ?	R. 7 years.		Slight twitching for 3 days, then disappeared.	Unknown. Not seen later.	Slight attack of erysipelas.
12	Putnam.	Godlee's table	June 1, 1881.	F. 45.	L. 9 years.		Entire paralysis for 2 months or more. After several months spasms reappeared.	Unrelieved after some months.	Supra-orbital nerve had been divided fruitlessly.
13	Southam. [Baum's method.]	Lancet. Oct. 8, 1881 and Godlee's table.	Aug. 1, 1881.	F. 32.	R. 4 years.		Paralysis present after 3 months, but fading.	Cure 3 months after operation.	
14	Benedikt	Wien. med. Presse. 1882. Nos. 13 and 14.	July 2, 1881.		Old.		An old paralysis was followed by secondary tic convulsif for which the operation was done. The lagophthalmia vanished in the 8 days of healing. Farad. contractility which had been absent reappeared, and the galvanic approached normal.	Improvement about 3 weeks after operation.	Operation was difficult as it was through the scar of old glandular inflammation; nerve was found thin and grey and degenerated.

15	Bernhardt. [Hahn operated.]	Berlin klin. Woch. 1882. No. 14, and Deutsch med. Woch. 1882. Nos. 9 and 29.	Aug. 1881.	F.	35.	L.	3 1-2 years.	Persistent drawing with a lens. See remarks.	Paralysis disappeared entirely in 5 mos.; twitching began after 7 mos; after 10 mos. considerable twitching but not so bad as before.	Improvement 10 mos. after operation.	Post. auric. nerve not paralysed; reac. of degeneration. [Grodiee says it followed <i>thaps</i> which caused contraction of eyelids." Bernhardt says it followed "nach anhalten dem Zeichen mit der <i>Lang's</i> wobel das linke Auge besonders angestrengt wurde." An amusing error of translation].
16	Gray. [Baum's method.]	Proc. Med. Soc. Kings Co., N. Y. VII. 1882. 127.	May 8, 1882.	M.	36.	R.	16 years.		This was a case of tic douloureux preceded by tic convulsif; pain relieved for four days, then worse than ever; twitching lessened; paralysis.	Unrelieved as to pain; twitchings improved after 3 mos.	Reac. of degen.
17	Gray. [Baum's method.]	Proc. Med. Soc. Kings Co., N. Y. VII. 1882. 127.	June 16, 1882.	M.	22.	R (L)	10 years.		Only right side stretched; paralysis.	Cure 3 months after operation.	Both hands also choreic. Reac. of degen.
18	Zesas.	Wien Med. Woch. 1884. No. 2 and 1885. No. 27.	Nov 16, 1882.	M.	37.	R.	8 years.	Cold.	No paralysis followed; spasms lessened and ceased Jan. 4, 1883. [7 weeks.] July 1885, still cured.	Cure 2 years and 8 months after operation.	No electrical change
19	Bernhardt. (Levy operated)	Archiv. f. Psychiatrie und Nervenkrank. XV. p. 777. 1884.	Jan. 16, 1884.	M.	25.	R.	4 1-2 years.	Cold.	Had paralysis of right face when first seen; after operation paralysis much diminished by April 1, 1884. By May 8, spasms returned almost as bad as ever. Voluntary power over some muscles had recovered.	Unrelieved of spasms 4 mos after operation; previous paralysis somewhat improved.	Reac. of Degen.

TABLE OF THE RECORDED CASES OF STRETCHING OF THE FACIAL NERVE.—Continued.

No.	Reporter and Method.	Reference.	D a.	Sex Age and Side.	Duration of Disease.	Supposed Cause.	Temporary Result.	Final Result.	Remarks.
20	Kaufmann. [Hueter's method.]	Centralbl. f. Chirurg. 1885, No. 3.	Sept. 16, 1884.	M. 61.	R. 7 years.	Anger.	Incomplete paralysis; improvement for 4 days; on 5th day returned as bad as ever.	Unrelieved 4 mos. after operation.	Only part of nerve stretched. On 5th day same nerve divided without result.
21	Keen. [Baum's Method.]	This Journal.	April 2, 1886.	F. 48.	R. 5 1-2 years.	Nervous trouble coincident with climacteric.	Paralysis; not lessened when reported and with no return of spasms.	Uncertain. Too early to report. (25 days) [2 1/2 mo's after operation, still cured.]	Reac. of degen. on 10th day. Infra orbital nerve had previously been stretched without permanent relief.

Of these 21 cases there are males, 9; females, 11; unstated 1. The right nerve was involved 11 times; the left 7, both sides 2, and side not stated, one. The age is from 21 to 72. Four of them had undergone previous operations, (4, 10, 12, 21), the first three section or resection of the supra-orbital and the last of the infra-orbital nerve, with no permanent effect.

Davidson (Lancet, Jan. 28, 1887,) stretched the infra orbital nerve in a woman at 53 for muscular spasms limited to the muscles of the region supplied by this nerve. The spasms ceased in a fortnight. The case was reported about two months after the operation.

The most accurate tables heretofore compiled, though not free from errors, are those of Godlee and Zesas. That of Chandler (N. Y. Med. Record, Sept. 9, 1882) is exceedingly inaccurate. Eulenberg has only reported one case, and there is no such case as that of "Germon," while the rose-colored views of the results are not justified by the facts. Dr. Harter in Agnew's Surg. (Vol. III) has used the tables of Chandler without verification (in that of mimic spasm at least,) and has repeated its errors. Moreover Harter's last four cases should be of the facial and not the infra-orbital nerve.

Reason for the Operation.—All of the cases have been for more or less extensive tic non douloureux of the face, lasting from two to ten years. In two cases paralysis of the face preceded the convulsive tic, and in one case tic douloureux followed the tic convulsif. As Sturge has pointed out, the lesion in tic convulsif is probably central and not peripheral, though Kaufmann's curious case (see p. 14) would seem to show otherwise. In my own case the previous history points almost conclusively in this direction from the repeated and extensive paralyses. It might be objected, therefore, *in limine* that the operation should not be done since it can not reach the actual seat of the disease, and any interference with the nerve, the mere conductor of motor impulses would have to paralyze the muscles in order to effect the desired relief. The experiment of Godlee, in which he dissected out the spinal accessory and the facial and found that a slight pull on the former was immediately evident on the central side of the short, wide and straight jugular foramen, while traction on the facial even to rupture of the nerve was not perceptible at the central end of the long, narrow and curved aqueductus Fallopii, proves that no central alteration can be urged in favor of the operation on the seventh nerve, although in one case (4) taste was lost for fifteen weeks. But *pes contra*, while the expected paralysis nearly always follows, as I shall show, it always disappears in time, and the relief of the tic that has followed in a good proportion of the cases, gives a reasonable ground for the operation.

Method of Operating.—Two methods have been proposed, that of Baum and that of Hueter. In the former the incision is made behind the ear by an angular incision $2\frac{1}{2}$ inches long, the apex being at the apex of the mastoid process. The parotid is the first land mark. Its posterior border is dissected and pushed forward by a grooved director and forceps till the shining aponeurosis of origin of the sterno-cleido is seen as the second land mark. The interspace between these two is cleared to the depth of 1 or $1\frac{1}{2}$ inches, when the prevertebral muscles and their anterior fascial covering is the next land mark. The nerve lies in front of this fascia. Sometimes the posterior belly of the digastric is seen. The transverse processes of the vertebræ and the styloid process can both be

felt and are valuable as additional guides. This space between the mastoid process and the superior ramus of the jaw is quite narrow and deep. It will barely admit the finger. Hence a good side light is essential, and I found great help from a student lamp and a forehead mirror held by Dr. Sinkler, which illuminated the deeper parts admirably. The chief trouble is to find the exact spot at which the nerve crosses this space on its way from the stylo-mastoid foramen to enter the parotid. Dissection will always reveal it, but in order to avoid needless injury and abridge the search, I found the use of a weak Faradaic current very useful. A strong current at any point in the moist state of the wound will produce muscular spasm at once, but a very weak current will only do so when the nerve is touched. A wet sponge was held on the cheek and the wire end of the other cord was touched at successive points till the nerve was easily detected when its white trunk was quickly laid bare. While being stretched the twitching produced by it should be noted to see whether all the branches have been stretched. If any escape the muscles supplied by them will not twitch when the nerve is stretched, and also spontaneous convulsive movements will sometimes recur in the muscles whose nerve branches have not been stretched even during etherization and so point out what branches have escaped.

The other method is that of Hueter by an incision in front of the ear 2 inches long, its middle at the level of the upper part of the lobule. The parotid is at once disclosed. The incision is carried more and more deeply till at about $\frac{3}{4}$ of an inch, one of the two main branches of the nerve is reached. Further dissection will soon reveal the second branch and at their junction the main trunk. If it is desired to dissect back to the foramen a second short incision at right angles to the first must be made posteriorly.

Of the two methods that of Baum is by far the better. In the first place, its scar is hidden by the ear, and especially in a woman this is very desirable. Secondly, it is far less bloody. Usually only the posterior auricular artery is cut, and possibly one or two other small vessels. Whereas, in Hueter's there are usually a number of glandular branches requiring ligation. Thirdly, much less damage to the gland and other

tissues is inflicted. Fourthly and chiefly, the nerve is reached directly at its emergence from the stylo-mastoid foramen before it has given off any branches except, possibly, the posterior auricular, an unimportant branch. How important this advantage is, is best shown by Kaufmann's case, in which he operated by Hueter's method. His first stretching disclosed the fact that he had not gone far enough back, for the frontalis and orbicularis palpebrum were not paralysed. Enlarging the wound upward and downward (it should have been backwards) a second stretching gave the same result. On the fifth day the twitching was as bad as ever, and he wished to do Baum's operation, but the patient would not consent to a second scar, so he opened the original wound, found the injected nerve and divided it. The wound promptly healed but no benefit resulted, and the patient went home worse than he came, for he not only had the twitching but his cheek and mouth were also paralyzed.

What light this case may throw upon the pathology of the disease I am hardly able to say. It certainly would seem to point to a peripheral cause for the spasms.

In Hoffmann's case also the muscles of the under lip and the platysma were not paralyzed, and in Eulenberg's and Hahn's cases the posterior auricular branch was not affected.

I have only had opportunity to compare the two methods upon the cadaver. The result of a score of trials is decidedly in favor of Baum's method except in the ease of performance from the lesser room and greater depth, in which particulars, Hueter's is the better operation. But these should not weigh in view of the reasons before stated.

The nerve being found *how* shall it be stretched, *in what direction* and with *what force*?

I have found an ordinary blunt hook an excellent means and no other instrument seems necessary.

As to *direction*, I stretched it chiefly from the periphery toward the centre as well as the hook would allow, both because no stretching on the central end would affect the medulla and because as Marcus has shown traction on the central end of a mixed nerve abolished sensibility while traction on the peripheral end abolished both motion and sensation, and the motor effect was here desired.

The *amount of force* to be used is as yet undetermined. Gray estimated it in his case at 6 to 7 pounds; Southam at 4 to 5 pounds, and in my own case it was estimated at 4 to 5 pounds. It was not enough to lift the head of the patient (which would probably weigh 6 to 7 pounds), for on carefully attempting to do this, before the head could be lifted I felt a few fibres giving way and I at once desisted. The head, however, was rolled from left to right quite forcibly.

Putnam records an interesting experiment on a dog. The facial has two branches, each about equal in size to the main trunk in man. One of these broke at 40 pounds. A much less weight would have broken the nerve in my patient, and in several cadavera injected and condensed by the chloride of zinc the attempt to lift the head caused rupture of the nerve. The dog above alluded to was then allowed to come partially out of the anæsthesia and the other branch was stretched. At 7 pounds the motion of the eyelid was impaired, a second pull of 8 pounds produced complete palsy which disappeared on the second day. Putnam recommends that the patient should be allowed partially to recover from the ether to judge of the effects of the pull and that two pulls of about 7 and 6 pounds be the limit imposed unless symptoms be so severe that prolonged palsy be desired. My own impression is that this is too great a force and that it can be best achieved empirically, the attempt being made to lift the head (6 to 7 pounds) and being abandoned the moment any fibres give way.

In Eulenberg's case the nerve was physically disorganized by the stretching, yet the paralysis disappeared in three months and the spasms returned, though with abated force. Schüssler states that in his case, after three or four pulls, the nerve lay in a small loop in the cavity of the wound, yet the palsy disappeared in twelve weeks and the spasms partially returned after six months.

The effects of slight and of severe stretching differ materially. As has been shown by Haber, Ranke, Cornet and others slight stretching either has no influence on the irritability of the nerve or even increases it, whereas greater stretching diminishes it or destroys it. Hence in cases of facial spasm the stretching should be as severe as the integrity of the nerve

will allow. And again the fact that the motor function of a mixed nerve is last lost is an additional reason for the maximum stretching that the nerve will bear. As Weir Mitchell also has shown that a nerve stretched to $\frac{1}{5}$ of its length lost its mechanical irritability but not its electrical, but that this last was also lost when the stretching reached $\frac{1}{4}$ of its length, this is also another reason for the greater degree of stretching. But this stretching should be gradual and not sudden.

The fact noted by Billroth that in crutch palsy, which is caused by direct pressure, the motor function is lost while sensibility remains, naturally raises the question as to whether pressure might not be advantageously substituted for stretching or, as in Baum's case, combined with it. Stretching first abolishes the sensory function, and the motor function last; while pressure reverses this and abolishes the motor function first. Zederbaum's careful experiments (Archiv Physiol. 1883, p. 161.) show that in the sciatic nerve of the frog, moderate pressure increased the irritability, the maximum being reached at 500 grams (a little over 1 ounce), but that at 900 grams (nearly two ounces), it began to diminish, and was lost at 1,700 grams (nearly four ounces). Baum is the only one who has used pressure as well as stretching, but the result was only a partial success.

The *after treatment* is simple. A few strands of horse-hair suffice for drainage, and with antiseptic dressing, the case should be well in a few days. In my own case the patient was out of bed on the third day; all the sutures were removed on the fourth day and she went home on the tenth day, having staid in the hospital voluntarily some days more than was absolutely needful. Her highest temperature was 100.4° on the day after the operation, being normal the next day. Rarely, if ever, should suppuration follow. In Godlee's first case the wound was not healed for six weeks.

I think it important to bandage the lower jaw for two or three days, to insure quiet while the wound is healing, and for the same reason to give only liquid food during several days in order to avoid the muscular effort and movements of mastication.

Results of the Operation.—The operation is free from danger;

no death has resulted; no serious complications, and, in fact, no serious illness. Paralysis of the facial muscles more or less complete both in degree and extent is always to be expected, indeed desired. But this paralysis has disappeared in every case after a few days, weeks or months, and in two cases (15, 19) in which prior to the operation paralysis had existed, some degree of voluntary and electrical control was attained. Indeed, this fact together with the experimental results before referred to as to the effect of moderate stretching in increasing nerve irritability, lead me to suggest that it would be highly proper in some obstinate cases of facial palsy, to stretch the seventh nerve as a therapeutic operation.

In cases 2 and 18 no paralysis resulted, and in case 1 it disappeared in half an hour, yet, in cases 1 and 2 there was decided permanent improvement, and in case 18 a cure lasting for two years and eight months.

In such cases as have been examined electrically, the reactions of degeneration have been found, but these have diminished as the nerve was regenerated, and have disappeared after some months. This is also in accordance with the results of experimental nerve stretching in animals in which microscopic examinations have been made. More careful observations are, however, needed upon this point.

As the paralysis has disappeared and the nerve has regenerated, in not a few cases the spasms have returned, while in others the relief has extended over years. Hence, the operation may be regarded from two points of view: (1). As giving temporary relief (palliative) and (2). As giving permanent relief (curative).

As a palliative operation the result has been as follows:

Case 1. Absolute relief eight or nine months. Since then great relief; (2 years).

Case 2. Absolute relief one day. Since then slight improvement; (2 years).

Case 3. Absolute relief for six months, then return of spasm in lessened severity.

Case 4. Absolute relief for three months, then spasms returned with lessened severity; (3 years and 2 months).

Case 5. Absolute relief for nearly a year, when spasms returned.

Case 6. Absolute relief three months, then gradual return of spasms in lessened severity; (4 months).

Case 7. Absolute relief nine months, then return as bad as ever; (3 years).

Case 10. Bilateral operation. Absolute relief twelve weeks on both sides, then return of spasms; (2 years.)

Case 12. Absolute relief for some months, then spasms returned.

Case 14. Absolute relief seven months, then spasms returned in lessened severity; (10 months).

Case 15. Great improvement for three weeks; prior paralysis lessened.

Case 16. Tic douloureux and convulsif both; pains relieved for four days, then worse than before; spasms somewhat relieved.

Case 19. Absolute relief four months when spasms returned with lessened severity.

Case 20. Absolute relief for four days; on fifth day as bad as ever; (4 months).

Or, in brief, fourteen cases with [1. Absolute relief under a week. Three cases followed by improvement for two years in one case and no improvement in the other two. [2. Absolute relief three weeks to four months.

Five cases followed by improvement in four cases, and no improvement in one.

3. Absolute relief four months to a year.

Six cases followed by improvement in three, and no improvement in three.

As a palliative operation only, therefore, it is well worth doing since at no risk of life and but little suffering, the relief is often prolonged and if the spasms return it is with lessened severity. Indeed, my own patient would gladly undergo it again for even the brief respite so far assured, and far prefers a permanent paralysis to the persistent spasms.

II. As a means of permanent cure, we have the following.

Case 8. Absolute relief for five years.

Case 9. Absolute cure or very great improvement (it is not quite clear which) for twenty-five months.

Case 13. Absolute relief for three months when last reported.

Case 17. Absolute relief for three months.

Case 18. Absolute relief for two years and eight months.

Or, in brief, two cases of relief, when last reported, for three months, and three of relief for from two to five years.

Of the remaining two cases Navratil's (11) was only followed for three days, and in my own, (21) though the result is perfect so far, yet, as it is only twenty-five days since the operation, it is too recent to classify. [Still cured as the proofsheets are corrected two and a half months after operation.]

It would seem, therefore, that whether viewed from the point of palliation or of cure, the operation is, with our present knowledge, to be looked upon favorably. Further observation may show its inutility, but when we consider the utter hopelessness of improvement, much less recovery, from any other means, relief by this operation, even if temporary, is had at a very trivial cost, and would be welcomed by any sufferer, while permanent cure is not impossible.

URETHRAL FEVER, WITH RECORDS OF THREE FATAL CASES.¹

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IT will be within the memory of most that Sir Andrew Clark addressed the Medical Society of London on catheter fever in the latter part of 1883, and followed this by another paper on the same subject read before the Med. Chi. Soc. of Edinboro. Sir Andrew chiefly alluded to a form of fever which sometimes follows the entrance into so-called "Catheter Life" in elderly men, and in which death may occur without any lesion post mortem to account for it, i. e. no evidence of kidney mischief nor of septic infection. I do not purpose dwelling upon this form now, though in passing I might say that I agree with the remarks which fell from Mr. Savory in the discussion following Sir Andrew Clark's paper, to the effect that in those cases, i. e. where urethral fever follows the passage of a catheter terminating after a time in death, to account for which nothing is discoverable at the autopsy, in these cases, I say, the fever is produced by local irritation through the nervous system.

To me the term "urethral fever" seems more appropriate than any other which has been brought forward; for this fever is always caused by some disturbance of the urethra, whether from the passage of the bougie, sound or catheter; or it may follow some more serious operation on that canal, as for instance internal or external urethrotomy, divulsion or rapid dilatation.

¹Read before the West London Med. Chir. Soc. on March 5th, 1886.

That the mere emptying of a distended bladder is not sufficient to give rise to this fever I would point out that one neither sees nor hears of it after relieving the bladder by either the rectal or supra-pubic punctures.

Instrumentation of the urethra may give rise to various constitutional disturbances for which I suggest the following classification, partly after Sir Henry Thompson:

1. Shock as evidenced by faintness, syncope, convulsions or death in a few hours.

2. Acute transient urethral fever. Where a rigor follows usually after micturition for the first time. The temperature rising rapidly to 104° or higher, and then slowly dropping to normal within 24 hours.

3. Acute recurring urethral fever. In this form rigors recur, followed often by herpes of the lips, face and ears, muscular pains and joint swellings.

4. Chronic urethral fever. Commencing often without any decided rigor or great rise of temperature generally associated with renal disease, though not always.

2, 3 and 4 may be caused either by (1) local irritation, or (2) absorption.

I do not propose to discuss these various forms seriatim, but will at once bring before your notice three cases of urethral fever ending, I regret to say, in death, and which have occurred in my practice; commenting upon each separately, having a view in the remarks I may make to points which have been raised in the discussions I have mentioned.

CASE 1. Stricture and Retention. Catheterism; Rigor; Death on the Fourth Day. E. Enticknap, æt. 22, a laborer, had difficulty in passing water for three years, during which time he has had retention four or five times. Two years ago he was laid up with gonorrhœal rheumatism. Ten weeks ago attended as an out-patient at the West London Hospital for stricture. At last attendance, No. 8, gum-elastic bougie was passed. Previous to admission several attempts had been made to pass an instrument but without success; in fact the manipulation must have been pretty severe, for he was bleeding from the urethra when first seen.

As the house surgeon was unable to pass a catheter, no prolonged

effort was made, but the patient was sent off to bed and ordered a hot bath.

After this a railroad catheter No. 4 was passed and four pints of urine drawn off. The note on the following day says:

Is in no pain; passed water this morning unaided; had a severe rigor at 5:15. During the next three hours 20 grs. of quinine were given; temperature 105.6° .

The note of the following day says; The patient is delirious; vomits everything; heart-sounds fluttering; no pulse to be felt at wrist; suppression of urine for the last twenty-four hours; hot air bath ordered.

Died at 11:20 on the following morning. His temperature then was 107.8° . Mr. Dunn informs me that at the post mortem a false passage was found in a sloughy condition. There was commencing endocarditis and numerous petechiæ in the various synovial and serous sacs. The kidneys were congested.

In classifying this case I should put it under the heading of acute urethral fever caused by absorption or septic infection, though nerve irritation may have played some part in the tragedy.

It is to be noted that this is not a case of catheterism for the first time. The man had been in the habit of having instruments passed, yet in spite of this preparation he dies. I suspect the rough handling the urethra had before he came to the hospital had a good deal to do with the result.

CASE 2. Stricture of Urethra. Paralysis and Death Following the Passage of a Bougie.—E. Harris, æt. 65, by no means a robust man, came under my care at the West London Hospital with a history of stricture of nine years duration. He had been in the habit of passing a No. 7 French catheter.

As there was a contracted meatus, it was thought advisable in the first place to incise this, resting content with the passage of a small bougie into the bladder. After a few days interval, I was able to diagnose three other strictures by means of a bougie à boule, viz., first at $2\frac{1}{2}$ inches, second, at 4 inches, and third in the sub-pubic region. Through this a small French bougie, No. 12, passed into the bladder, at the same time through the anterior strictures a No. 20 was passed. This instrumentation was a week after the meatotomy, and was followed by a rise of temperature (101.8°) but without a rigor.

Three days afterward the house surgeon attempted to pass a No. 14, but failing in this, passed No. 11. Two hours subsequently the patient had a rigor, and his temperature went up to 103° . He became restless, then delirious, and toward evening of the same day quite unconscious. At night the patient got worse, his right radial pulse was quite imperceptible and his left side became paralysed. The pupils were much contracted, and the urine and fæces passed involuntarily. The patient remained in the same condition all next day and died on the following.

P. M. The bases of both lungs were in a state of hypostatic congestion. The liver was enlarged, pale and fatty; arteries atheromatous; kidneys injected; bladder healthy. The urethra was strictured at the membranous portion, at which point were two false passages.

Brain:—Vessels of pia mater distended. In the centre of the external capsule on the right side there was a patch of softening, the size of a three-penny piece, which was recent. The cerebral vessels were atheromatous.

In this case the penile urethra stood any amount of manipulation, but directly there was any disturbance of the sub-pubic stricture, a rise of temperature followed, thus illustrating a fact upon which I shall touch again, viz., that constitutional disturbance but rarely follows (and as far as I know, when present, is never severe,) instrumentation of the penile urethra. The rigor which ushered in the third and final rise of temperature followed an ineffectual attempt to pass a certain instrument, though a smaller one was passed afterwards.

I would classify this case with the previous one, viz., as one of acute urethral fever, for the three elevations of temperature followed and were distinctly due to instrumentation. But was this case of acute urethral fever caused in the same way as was the last? I think not, judging from the post mortem appearances. That, you may recollect, I put down to absorption looking to the septic appearances found after death. This, I should say, was set up by local irritation of the nerves supplying the membranous and prostatic urethra, causing dilatation of internal vessels by reflex action. This congestion of vessels already atheromatous proved too great a strain for those in the brain, hence the softening found in the corpus striatum.

CASE 3. *Stricture of Urethra. Internal Urethrotomy. Death from Septic Pleurisy and Pneumonia*.—John K., æt. 31, a warehouseman, was admitted to St. Peter's Hospital on December 29, 1885, with a dense and tight stricture $4\frac{1}{2}$ inches from the meatus, which only admitted a No. 8 French bougie. He had suffered from stricture and occasional retention for five or six years, and for which external urethrotomy had been performed in the German hospital three years previously. His urine was acid, 1015, with a slight mucous deposit, but no albumen.

On December 30th, without the aid of an anæsthetic I performed internal urethrotomy with Teevan's urethrotome. The stricture was a long one and much indurated, and considerable force was required to cut through it. A No. 12 silver catheter (English gauge) was afterwards passed, the water drawn off, and an iodoform solution injected into the bladder. I also inserted an iodoform bougie into the urethra at the site of incision, hoping thereby to protect and antisepticise the wound and so prevent rigors.

The patient was sick after passing water for the first time; this was at 11 p. m. Sickness recurred twice during the night after micturition, though the patient had no rigor.

On January 1st, the temperature was normal and a French bougie, No. 20, was passed with ease. Evening temperature 100.6° .

On January 2d, the third day after the operation, No. 21 was passed. Herpes appeared on the lips. On the three following days the patient had chills with one distinct rigor. Temperature going up to 104° ; for this Warburg's tincture was given (a medicine most potent for good in these cases). On the seventh day sickness recurred and persisted off and on for some days; a mustard leaf and blister to the epigastrium relieved it. Nutrient enemata were given. On the eleventh day the patient complained of much pain in the right chest, where a well marked friction sound was heard.

Brandy and quinine enemata. Chest painted with tincture of iodine.

On the twelfth day the sputum was rusty. Friction over both lungs; crepitation at bases, dulness and bronchial breathing; was unconscious at night, but took plenty of nourishment. A day or two afterwards the belly became distended, and he sank on the fifteenth day, the lungs getting very clogged.

Post mortem ten hours after death. Weather cold. Body emaciated; yellowish tinge of skin. Rigor mortis present. Heart healthy—small amount of clot and some dark fluid blood.

Pleura—The visceral layer on both sides covered with recent phlegmonous lymph.

Lungs—The base of both was pneumonic, and at the posterior part were several small gangrenous abscess cavities containing sanious pus.

Liver—Large and vascular. Tissue healthy.

Spleen—Large, soft and friable.

Kidneys—More than normally vascular—a large congested patch in one.

Bladder—Somewhat dilated, but showed no signs of inflammation.

Urethra—At the upper part along the membranous portion is the mark of the urethrotomy. The incision is gaping and there is no inflammation around. Just beyond and leading from it towards the bladder is a pouch, the cavity of which might contain a large hazel nut, blind externally and communicating with the urethra below by an open mouth. No signs of inflammatory action appear here either, but on dissection the veins leading from the prostate to the internal iliac are found to be plugged. There was no peritonitis nor pus in the joints. (For this account of the post mortem I am indebted to our House Surgeon, Mr. Thornton). The specimen is before you, consisting of the kidneys, bladder, urethra and posterior part of urethra. The ureters are dilated and one contains a small calculus.

This case, I am afraid, must be put down to pyæmia. The patient appeared a healthy though not a robust man. His urine was normal. It will be noticed that in the account of the operation mention is made of some difficulty in cutting through the stricture owing to its density. I have found that where this is the case, or where one has a difficulty in passing a catheter after the withdrawal of the urethrotome, one may expect a rigor.

I endeavored to anticipate this in the case just related by leaving in the bladder a solution of iodoform, and inserting an iodoform bougie into the urethra. The temperature chart shows that the patient had no rigor, after first passing water, and his temperature only went up to 101°.

He felt well enough to get up on the second day, but this was followed by a chill and temperature 104°. Eventually pleurisy and pneumonia supervened. To what was this due? Was it to septic infection? If so, it is curious that there was no sign of unhealthy action about the lesion in the urethra, though I look upon the plugging of the veins as more than

suspicious; also it is remarkable that this, the first death after internal urethrotomy I have had, should have occurred after the unusual precautions I employed.

Such, then, is the history of these three fatal cases. I will now relate a case of urethral fever, which at the time (now over a year ago) caused me a good deal of anxiety, but which had a happier ending.

CASE 4. Multiple Stricture of the Urethra, treated Firstly by Dilatation, Secondly by Dilating Urethrotomy, and Thirdly by Internal Urethrotomy. The Latter Followed by Fever and Suppression.—E. S., æt. 38, a sergeant in a regiment of lancers, was admitted into the West London Hospital on December 4th, 1884. There was a two year's history of stricture which came on after gonorrhœa. He was a tall, well-developed, muscular man, and had been sheep-farming in Texas and Mexico. No history of any previous illness, with the exception of rheumatism when young. On examination three strictures were detected, two penile and one sub-pubic, the latter being very hard and only admitting the smallest filiform bougie.

On the following day, under ether, I used Harrison's dilator, screwed on to a filiform guide bougie; eight successive bolts were used, after which I was able to pass a 22 catheter with ease. Beyond a little scalding on micturition no inconvenience resulted. Two days after, i. e., on the 7th, 20 bougie passed, on the 9th, 14 with difficulty. On the 16th, or seven days afterward, as re-contraction to a considerable extent had taken place, I divided the two anterior strictures by Otis' urethrotome to 30 mm., but did not interfere with the deep stricture. This was done without ether. No constitutional disturbance followed. After the lapse of a week, as the sub-pubic stricture showed no signs of dilating, I performed internal urethrotomy by means of Teevan's instrument, the patient being in bed and without the aid of an anæsthetic. Considerable difficulty was encountered in cutting through the stricture, so hard and resisting was it, in fact, I had to use both hands to force the blade through, (a thing I have never had to do before nor since). There was pretty free bleeding afterwards.

The following morning the urine was drawn off, as patient complained of great pain during micturition. The same afternoon a rigor lasting 25 minutes took place; temperature 103° . He vomited and was delirious in the night.

The following day was Christmas day, and towards night the patient

got worse. The vomiting, which had ceased, returned. Pulse was dicrotic and easily compressible. Delirium. Skin hot and dry; temperature 102.4°. Has only passed 3 ounces of urine in the last 28 hours. No distention of the bladder. Hot air bath for one hour which caused free diaphoresis and gave great relief.

Twenty-sixth, much improvement, though still prostrate. Has passed $\bar{3}$ iv of water, chocolate color and very thick; was ordered Inf. digitalis $\bar{3}$ ss every two hours. At noon a vapor bath for 45 minutes, after which patient perspired freely.

At 5:30 he passed $\bar{3}$ vi of urine and slept. For the last twenty-four hours has been delirious, but is now quite sensible. Digitalis every four hours. (This note was made at 11 p. m.)

Henceforth the patient passed water very freely and it soon ceased to be colored, though containing a trace of albumen.

During the following ten days, bougies increasing in size from 18 to 23 were passed with ease.

On the 10th of January he complained of various muscular pains, chiefly about the hips and thighs, which were severe enough to prevent the patient walking. He eventually left the hospital passing 23 for himself, but walked with difficulty owing to stiffness about the thigh.

This, which might be called a case of acute transient urethral fever offers several points for our consideration. In the first place rapid dilatation, although followed by the loss of a few drops of blood (showing a lesion of the mucous membrane), gave rise to no constitutional disturbance; neither did the division of the anterior strictures, although freely cut, and this fully accords with my experience, for I have never known rigors and fever follow meatotomy and division of anterior strictures where the deep or fixed urethra was left untouched.

Henry Morris, however, in his recently published work on diseases of the kidney says he has seen urinary fever follow on cancer of the penis opening into the urethra, causing a fistula just behind the glans; a rigor following the passage of urine through this fistula. Also in two cases of stricture of the urethra situated, one at 1½ inches and the other at 3 inches. With regard to the cancer case, it is conceivable that the irritation caused by the flow of urine over a foul and ulcerating surface might cause a rigor; concerning the two other cases,

it is probable that the bougie or catheter was passed not only through the stricture, but through the entire length of the canal, and so might have irritated the deep urethra. I have already mentioned the fact that where the urethra is subjected to prolonged instrumentation or to unusual violence, necessitated as in the last case by the density of the neoplastic tissue to be cut through, one may expect constitutional disturbance to follow.

Sir Andrew Clark asks whether the administration of an anæsthetic would not avert these rigors and pyrexia, and Victor Horsley, in his lecture on urethral fever at the Brown Institute, is of opinion that it does, and argues from this that the fever is therefore due to nerve irritation and not to absorption.

On looking through the records of cases of stricture operated upon at St. Peter's Hospital during the past three years, whether by external or internal urethrotomy, or by both combined, or treated by dilatation, and in which an anæsthetic was given, one or more rigors followed in exactly 50 per cent. of the cases. In fifty-nine cases where no anæsthetic was employed, rigors only followed in eighteen cases. Again, taking uncomplicated cases of internal urethrotomy, anæsthetics were given forty-seven times, followed in twenty cases by rigors. The operation was done without anæsthetics also forty-seven times, and rigors only followed in nineteen cases.

Where no mention is made as to the administration of chloroform or ether, out of seventy-four cases rigors followed in thirty-three.

From these statistics it would appear that rigors follow operative interference with the urethra in not quite half the cases, and anæsthetics do not seem to lessen the tendency to urethral fever but rather the reverse, though it must be borne in mind, that as a rule, it was only in the simpler cases, i. e., where one did not expect to meet with any difficulty or hitch in the performance of the operation, or where the patient himself preferred having it done without and was therefore not of a nervous temperament, that the administration was omitted.

The next point in case 4 is suppression which lasted twenty-eight hours. This is a grave symptom and points to renal congestion as does also the urine which is first passed after the

operation, which is always blood stained, loaded with urates and albumen. Out of ninety-four cases of internal urethrotomy, suppression occurred seven times, lasting in the most severe case for fifty-five hours. I find that the operation has been performed with the aid of an anæsthetic in three cases where this symptom was most prolonged. It is worthy of mention that all these cases ultimately recovered.

The treatment which I have found most successful for this is the hot air bath to induce copious diaphoresis, together with 3ss doses of infusion of digitalis every two hours. Turpentine enemata are also useful where constipation exists.

In conclusion, let me draw your attention to the fact that some patients with stricture are liable to periodic shiverings which they lose when their stricture has been fully dilated or cured. Again stricture patients in whom the passage of a bougie occasions rigors may after an internal urethrotomy get well without the occurrence of any further rigors. These rigors then can hardly be due to absorption.

It is pretty clear that when, after an internal urethrotomy a rigor follows the first act of micturition, it is due either to absorption of urine or to its irritating effect upon the wound. It therefore behoves us to prevent, if possible, this contact of the urine with the wound, and for this purpose I would suggest (it is merely a suggestion, for I have not tried it) a temporary rectal or prostatic puncture for the purpose of carrying off the urine until such a time as it is thought safe to allow the patient to micturate naturally.

ON THE RADICAL CURE OF HYDROCELE BY ANTISEPTIC INCISION.¹

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AT the present moment there may be said to be three methods prominently before the profession for the radical cure of hydrocele—the time-honored injection of iodine, the antiseptic incision and suture of the tunica vaginalis to the scrotal skin (with drainage), proposed by Volkmann, and the more recent method of the injection of carbolic acid, suggested by Levis, of Philadelphia. An important modification of Volkmann's method has been adopted by Bergmann, of Berlin. It consists in the extirpation of all the tunica vaginalis save that covering the testicle. I have had some experience with the antiseptic incision, which I wish to present to the society, though the general results of that method may be familiar to all.

But I wish to mention these results because but one or two American surgeons have reported their experience in detail, and because I know that members of the society have had a large experience with other methods. It is, hence, rather as a suggestion for a discussion that I offer these few remarks.

I have operated on fourteen patients in all. One case may be thrown out of consideration, since the cure of a large reducible hernia was attempted at the same time, and the patient died from peritonitis. Of the thirteen patients, all made satisfactory recoveries but one. This was a laboring man, forty-two years of age, somewhat debilitated from exposure and lack

¹Read before the New York Surgical Society, February 22, 1886.

of food, but presenting no signs of organic disease of the internal organs, who had had double hydrocele for six months. Both sides were operated on at once; the wound was irrigated moderately with 1 to 5,000 solution of bichloride of mercury, and a dressing of bichloride gauze was applied. In forty-eight hours diarrhoea occurred. This was followed by vomiting, abdominal pain, and tympanites, and on the fourth day he died. At the autopsy there were found only the evidences of violent gastro-enteritis, the rectum containing several patches of gangrenous mucous membrane.

Of the twelve successful cases, ten were hydroceles of the tunica vaginalis, and two were hydroceles of the cord. The two latter had existed each for three or four years. The duration of the former was in six cases "about one year," in two cases between one and two years, in two others three years and over. As regards previous treatment, two had been injected with carbolic acid (one of them on two occasions), one with tincture of iodine, and the rest had been tapped or received no treatment. At the time of operation but one sac was observed to be decidedly thickened. This contained one or two calcareous patches, which were cut out. One hydrocele of the cord, as large as a horse-chestnut, was found to be made up of five or six cysts. This case carbolic acid had failed twice to cure. The other hydrocele of the cord was in reality a compound cyst of the head of the epididymis. A number of cysts of the size of a split pea were clustered about the epididymis, and contained within a larger cyst which reached up on the cord for an inch and a half.

In ten cases Volkmann's operation was done; in two (the cysts of the cord and epididymis) the entire parietal layer of the tunica vaginalis was excised. Bichloride of mercury of the strength of 1 to 5,000 was used in moderation to irrigate the wounds, and extreme care taken to tie all bleeding points. The incisions were long enough to reach from the top of the sac to the bottom of the scrotum. The tunica vaginalis was united by a continuous catgut suture to the skin, and two or three deeper sutures were applied to hold the two halves of the sac in contact. A further effort was made in this direction by the application of the dressing in such a way as to *hold* the

serous surfaces together. Bone tubes were used in three cases, rubber drains in nine. And here I may say that the latter were shown to be preferable. The bone tubes softened rapidly, but were not absorbed at all, and did not adapt themselves to the sinuosities of the wound. The dressing was uniformly of peat-bags (with bichloride) and bichloride gauze, with occasionally a strip of iodoform gauze over the line of the suture, and an outer layer of absorbent cotton. There was no instance of excoriation or marked erythema of the skin. The penis protruded through the middle of the dressing, which was applied snugly with crinoline bandages. One or two patients had to be catheterized for twenty-four or forty-eight hours; but this was the only discomfort experienced. The career of the wounds was in all cases aseptic, and without fever. A temperature of 100.6° on the evening of the second to third day, without any acceleration of the pulse, was the greatest constitutional disturbance. With little variation, the first dressing remained in place till the seventh day. On its removal the tubes were withdrawn, and a lighter dressing of iodoform or boric-acid ointment and plain absorbent cotton was applied, supported by a suspensory bandage. This was changed as often as it became soiled. The patients were allowed to move about a day or two later, but were not, with one or two exceptions, discharged till the sinuses were healed. As a rule, primary union was found on removing the first dressing. In six cases this was *complete* except where the drainage-tube emerged; in five, besides the "drain sinus," there was a strip of granulations along a portion of the line of suture, forming a quite superficial ulcer, which scabbed over rapidly. In one case primary union was secured, but an accumulation of pus (without fever) made it necessary to break down the adhesion, and the abscess required two months to heal. The sinuses left after removal of the drain healed without special attention. There was no instance of orchitis, or epididymitis, or inguinal adenitis, and the induration and thickening along the cord, which had been noted by others, disappeared by the time the sinus closed, or soon after.

As regards the *time* occupied by the treatment, I find that

the shortest period of confinement to bed was seven days, the longest, three weeks; the average stay in bed in all twelve cases was ten days. The shortest stay in hospital was ten days, the longest sixty days, the average twenty-seven days. Two cases were much slower in healing than the rest—one from the occurrence of the abscess just referred to, the other from unexplained causes. I think with proper care the ordinary case could be expected to get through in three weeks. I have had the opportunity of examining five of these patients one year after the operation, and they remain cured. Two have been seen six months, two others four months after operation, and are free from recurrence. Of the remaining three I have no information. I may state further that all were operated upon under ether except one. In this case cocaine was used, with the effect of rendering the operation absolutely painless.

The result of the treatment of these thirteen patients may be briefly stated as follows: One has died from mercurial poisoning. Twelve have recovered—ten after incision with suture, two after excision of the sac. The wounds, except in one case, have healed without pain or constitutional disturbance, and, on an average, in twenty-seven days, ten of which were spent in bed. Nine out of twelve patients are known to have had no recurrence at a period of from four to twelve months after the operation.

This list of cases adds one to the two deaths previously reported from this operation. A writer in the *Medical News* of May 3, 1884, collected from various sources 330 cases, of which two proved fatal from septicæmia or pyæmia. Bramann,¹ from v. Bergmann's clinic, has reported twenty cases without any deaths. This would make 363 cases with three deaths, a mortality percentage of .82. As to recurrence, I have no further information than that given of the 330 cases above referred to, where in five, or 1.5, it was noted.

The duration of treatment is variously given, and I do not think much stress can be laid on it, since no two surgeons estimate it in the same way. It is stated by Volkmann to be on

¹"Berlin klin. Wochen.," April 6, 1885.

the average twelve days, by Juillard ten days, by Kuester and Rochelt fourteen days, by Lister seventeen days, Albert twenty-five days, Albers five to six weeks, English fifteen to forty-five.¹

The possibility of recurrence is generally admitted, though alleged to be rare, and the cause is found in the failure of the two serous surfaces to unite fully after suture. Small cavities are left, which become the seat of reaccumulation. In order to obviate this, v. Bergmann has proposed the extirpation of the parietal layer, and carried it out in twenty cases, as mentioned above. The wounds healed without febrile movement on an average in ten to twelve days, and no recurrence has yet been seen.

From the experience of the two cases of hydrocele of the cord and one of hydrocele of the tunica vaginalis in which the parietal layer was cut away, and another case in which I have lately sacrificed this membrane in a cyst which complicated a varicocele, I can confirm the statement of Bramann that the method is exceedingly easy, is even more rapid than Volkmann's, since all the time spent in suturing the tunica to the skin is saved, and that the conditions for uncomplicated wound-healing are more favorable; and the extirpation of all the tunica which gives origin to the cysts seems to leave no chance for recurrence. The functions of the testicle and the cremaster muscle are in no way disturbed, and the cicatrix left is barely perceptible.

The technique of the operation needs but slight mention. The incision should reach from the top of the sac to the bottom of the scrotum, and I prefer to place its lower end behind the testicle in order that the drainage-tube may be out of the way. The tunica is best removed by stretching it on the fingers and cutting through and pushing back the loose connective tissue with blunt scissors. It is much easier than the extirpation of a hernial sac where the presence of a truss has made the layers adherent. The membrane is removed close up to the epididymis and testicle. It is important to be very painstaking with the ligatures, and to have the drain long enough to pass beyond

¹These figures are from Bramann's article.

the testicle. In other respects one proceeds as in Volkmann's operation, but the suturing of the wound is simpler, as the tunica is absent.

The iodine injection has no deaths at its door, but a large percentage of recurrences has been noted. In 523 cases there have been forty-four recurrences, a percentage of 8.4, and acute suppuration has supervened in five instances, or .95 per cent.¹ The time of treatment at the clinic at Kiel is estimated at eight to nine days; in Billroth's clinic, about nine days; in the Charité Hospital at Berlin, two to seven weeks. I should think ten days an outside estimate for the cases I have treated in this way, most of which have been in private practice; but I agree with Bramann in assuming that this class of patients, as they have had no wounds, are apt to be dismissed from treatment many days before they are really able to resume their occupations, when there is still much swelling or tenderness present; and that, if we did not call them cured till the parts had been restored to a normal appearance, the duration of treatment with iodine injection would cover quite as long a period as that by antiseptic incision.

The carbolic-acid injection has as yet caused no fatal results. Of eighty-two cases reported by Weir and Abbé, there was suppuration in three cases, in one of which the sac sloughed. One recurrence is noted. The recent statement of Dr. Keyes,² that he has employed it in all classes of cases, to the number of more than fifty, without any accidents and with perfectly satisfactory results, is enough to warrant its general adoption. But I cannot help thinking that the method is too recent yet for us to get information as to the percentage of relapses. It is a striking fact that, of the thirteen cases I have met with, two had been treated unsuccessfully in this way. As it attempts a cure by the same process as that incited by iodine, an adhesive inflammation, I see no reason to believe that it will ever yield much better results. Fifty years ago the iodine method was reported from the Native Hospital of Calcutta (quoted by Curling) to have been employed in 2,393 cases with less than one per cent. of failures. But one German clinic has reported re-

¹ *Med. News*, May 3, 1884.

² *Med. Record*, Feb. 20, 1886.

currence in 15.5 per cent. of the cases. The general impression is that carbolic acid is less painful than iodine, and that it is less irritating.

One fact bearing on the ability of any injection treatment has been demonstrated by the practice of antiseptic incision. That is, the presence of pathological conditions with which the injections could not reasonably be expected to cope successfully. In a total of 123 cases, collected by the writer in the *Medical News*, "cysts were found on the vaginal tunic, the testicle, or epididymis in forty-three, the testicle and epididymis were enlarged in twenty-three, the vaginal tunic was thickened in fifty-four, false membranes were present in twenty-six, and free or attached foreign bodies were met with in three." The two multiple cysts of the cord to which I have referred, one of which had twice resisted the injection of carbolic acid, go with these other figures to demonstrate to my mind that we must expect a certain percentage of failures.

The small percentage of failures after the antiseptic incision shows it to be, in my opinion, incontestably the *surest* way of curing any form of hydrocele; and if we add to this operation the extirpation of the tunica vaginalis, the method would be absolutely free from any recurrence. But it is certainly not without risk. Even with its small percentage of deaths—.82 per cent.—it makes a wound of considerable extent, which exposes the patient to all the accidents of wound-healing; it necessitates, if one acts with due caution, longer confinement to bed, and demands rigorous attention to, and every facility for, antiseptic treatment. In view of these considerations, I shall be disposed in the future to reserve the operation for cases in which the injection method has failed, or to perform it only upon patients who, with knowledge of its chances, prefer to take them. As to the relative merits of the carbolic-acid and iodine injections I have no opinion to express based on personal experience, but, from the experience of Weir, Keyes and others, I should feel warranted in adopting the carbolic acid, and in sticking to it till it is proved less satisfactory than it seems to be at present. But I believe that the possibility of failure or of an *early recurrence* should never be left out of consideration in recommending the injection of either agent, and

that we should be prepared with every antiseptic precaution to perform successfully the only truly radical operation—that of extirpation of the parietal tunica vaginalis.

DISCUSSION.

Dr. H. B. Sands said the operation, to which particular reference had been made, was one which he had found occasion to perform in only three instances, all of which had ended satisfactorily. But he thought the paper showed that a major operation should never be done when a minor operation would suffice. His own experience would go to show that iodine injections were not only safer than any other operation, but far more successful than would be inferred from Dr. Bull's paper. His experience might have been exceptional, but he could recall only very few failures in a large number of cases. He had supposed that failure after using iodine was not infrequently due to its faulty employment, using either too weak a fluid or one too small in quantity. He had usually employed the ordinary tincture of iodine, injecting from two to four drachms of it, and leaving it in the sac. He had never known symptoms of iodism to follow, and he had almost invariably found the practice to be followed by a cure. His own experience had been that the patient would recover within a week or ten days. He could recall six cases in which he had operated within the last eight or nine months, all in private practice, and all these patients had gone out of the house in the course of a week, except one who remained indoors much longer than was necessary for his health. He did not think iodine injections were attended with any risk to life, or with much danger of recurrence of the hydrocele. Of course, as Dr. Bull had said, the incision sometimes revealed pathological conditions with which injections could not be expected to cope. But the best answer to the question would be found in the result of a large experience, and his own experience was very strongly in favor of iodine injections. He could see no excuse for subjecting any patient suffering with ordinary hydrocele to the antiseptic operation. As the writer had said, it was necessary to observe strict antiseptic precautions, which might be carried out in large cities and in hospital practice, but to recommend such a method for general use would be very dangerous, and he was very strongly opposed to it, because it was only when the iodine treatment had failed, and the pathological condition was such as could not be removed by the iodine treatment, that it was justifiable. He had had only a limited experience in the use of carbolic acid, but he had twice seen suppuration follow its use, which he had not seen after the use of iodine, and

he thought injection of the sac with iodine was attended with the least possible risk. He had never seen constitutional disturbance which had given him any alarm. He believed that the use of iodine, or perhaps carbolic acid, which might be less painful, was better than incision, which should be reserved for cases in which the ordinary treatment had failed.

Dr. C. K. Briddon had performed Volkmann's operation a number of times, and his experience with reference to cure did not coincide with that of the author of the paper; certainly the period required to effect a cure was much longer. He thought one difficulty was in applying an antiseptic dressing to the scrotum, from it being so movable. He had had quite a large experience with the use of iodine injections, and the results coincided with Dr. Sands'. He had treated a large number of cases where the patients had not been confined to bed at all. The latter cases had occurred in dispensary practice a good many years ago, and he remembered only one patient whom he had visited after his hydrocele had been injected at the dispensary; that was an old man in whom there was a double hydrocele, and he had made the injection on both sides at one sitting. There was quite sharp reaction, but no suppuration occurred. In all the other cases the patients visited the dispensary within four or five days, which he recollected was the average period of time they were kept from their work. His method was first to empty the sac and then inject two or three drachms of tincture of iodine, to which was added a piece of iodide of potassium as large as a pea, to prevent the precipitation of iodine in the scrotum. He did not remember a single recurrence; if recurrence took place, the patients did not return to him. He had not used carbolic acid, because he had been so well satisfied with iodine. The only disaster he had had was in a case where he had tapped without injecting iodine, and sloughing of the scrotum took place.

Dr. R. F. Weir said that in 1882 he had presented to the society a paper on the subject of carbolic acid injections for hydrocele, as suggested by Levis, of Philadelphia, and he had then reported that he had performed Volkmann's operation twenty-seven times, and had gladly abandoned it in favor of the newer method of treatment, which was not only superior to Volkmann's operation, but also to the iodine treatment, after which he had seen occasional relapses and great pain following immediately upon the use of iodine, together with sufficient inflammatory action to keep the patient in bed several days, and to give rise to a great deal of suffering. Besides, in his army experience he had seen one case of death follow injection of hydrocele with iodine,

but this had occurred in a patient who was enfeebled by a recent fever, and in whom the inflammation involved the cord and subperitoneal tissues. He had now used carbolic acid injections over sixty times, and in only two cases had he regretted their use. Occasionally relapses had occurred, not in a large proportion, however, as he could recall only four or five instances, and in those the patients were cured by a repetition of the same treatment. In three of these the injection was repeated too soon, as subsequent experience showed that a longer delay would probably have resulted in a cure. In one instance of the two just alluded to there was quite extensive suppuration following the use of carbolic acid, and in another suppuration was threatened. In the one in which suppuration occurred a lesson was derived which was of importance to place before the society and ask attention to. He had been, up to this time, in the habit of injecting various quantities—from half a drachm to drachm and a half—of carbolic acid after emptying the sac. In this case, one of quite a large hydrocele, the iodine treatment had been unsuccessful, and the other side of the scrotum had been treated successfully by incision after the old method. He injected a drachm and a half of carbolic acid, which was followed by the usual absence of pain, but with recurrence of swelling after a few days, which did not subside, but went on to suppuration, and on opening the abscess, shreds of membrane were discharged, and finally large masses; in other words, gangrene of nearly the entire tunica vaginalis was produced. Since then he had rarely injected more than half a drachm at a time. Not that he was dissatisfied with the carbolic-acid treatment, but, led by a desire of testing the operation under cocaine, he had late performed Volkmann's operation five times with the new anæsthetic with satisfactory results, one of which was done on a man at the college clinic. The operation was painless, an antiseptic dressing was applied, a well-padded compress and a double figure-of-eight bandage, and the man was allowed to go home. Two days afterward he appeared at the hospital for inspection of the dressing, which was still complete. It was an ambulant case throughout, and progressed favorably from the outset, which illustrated that it was possible to keep an antiseptic dressing upon the scrotum when thoroughly applied.

The objection to Volkmann's operation, and to the still more thorough one of Bergmann, was a just one, and its severity was fully appreciated by Koenig, who had stated that if he had a hydrocele he should prefer the injection process rather than undergo such an heroic operation for a small ailment. The speaker still felt that the painlessness of carbolic acid injections and comparatively slight reaction, as well as the

fair amount of certainty of cure, entitled them to the first place in the treatment of this affection.

Dr. Sands remarked that Dr. Weir had confessed to eight to ten per cent. of failures or recurrences. He had not seen any such percentage of failures or recurrences after the iodine treatment.

Dr. Weir referred to Osborn's recent monograph, in which he gave fifty-four cases with eighteen failures with the iodine treatment, which was a very large percentage.

Dr. George A. Peters said his experience had been chiefly in the use of injections of iodine, and he had been very well satisfied with them—so well satisfied that he had not been tempted to perform Volkmann's operation. He injected the pure tincture, and the quantity was two drachms. He thought one reason why occasional suppuration occurred was carelessness in its use, some of the tincture being allowed to get into the cellular tissue. As to duration, he thought that a week or ten days would cover the treatment. In his experience the number of recurrences had been very small.

Dr. L. A. Stimson said his personal experience with Volkmann's operation had been limited to three cases. In the last one, that of a young man, he had made an incision not more than an inch and a half in length, stitched the edges of the parietal tunica to the skin, and then washed the cavity of the sac out with pure carbolic acid. He had done this with the expectation of so modifying the apposed surfaces that union would take place promptly and completely, and in this instance the result had justified the hope, as the patient got well without discharge from the wound after the first twenty-four hours. The cure was complete. This was the only case in which he had applied carbolic acid in this manner. As to the carbolic acid treatment, he had seen one case of suppuration after injection of a solution of carbolic acid in glycerine. He had seen some cases of recurrence after the use of the method; in one of them spontaneous cure took place afterward. In two cases he had tried another method, namely, injections of chloride of zinc. One was in a lad, eighteen years of age, in which, without drawing off the liquid, he had injected half a drachm of five per cent. solution of chloride of zinc. It caused no pain at the time, but during the afternoon and evening and the following day the pain was considerable; on the fourth day he drew off four ounces of liquid, which was turbid and contained many leucocytes, and the case then went on to recovery without further incident. In another case a weaker solution had failed, but he thought the method was worthy of further trial.

Dr. Lange mentioned one rare occurrence which he had met with in operating according to Volkmann's method—the presence of two or three long hairs taking their origin from the tunica vaginalis of the testicle. He excised the hairs, but had not made a microscopic examination of the tissue from which they took their origin. Recovery took place without disturbance. He had not seen disagreeable symptoms after Volkmann's operation, which he had performed in a number of cases, but he must say that, as a rule, in cases where the tunica vaginalis was thin and the hydrocele not of long standing, he treated them by the injection of iodine. He had seen recurrence exceptionally after repeated injections. Probably for a small percentage of cases the radical operation would always remain necessary—for instance, for those where the tunica vaginalis was very much thickened and cases of hæmatocele where thick fibrinous false membranes existed. He did not regard the operation as dangerous if the necessary precautions were taken.

Dr. T. M. Markoe was convinced that the success of the iodine treatment depended very much upon the manner in which it was carried out. He had not used the simple tincture, for the reason that the iodine would be precipitated by the serous fluid, and be liable to be deposited in a single spot, where it was more likely to produce irritation, if irritation was produced at all. He had, therefore, for a great many years used the strong Lugol's solution. This in his hands had been very efficacious. Although he had performed Volkmann's operation a certain number of times in hospital practice, he had in private practice still adhered to the iodine treatment.

Dr. T. McBurney had met with quite a number of cases in which the patients had reported that they had received injections of iodine, and, in some instances, two or three times. He had, however, been struck with the ease with which cure was effected in even these cases by repeating the process. He had thought that the recurrence was due to one of two errors—either in not emptying the sac completely, or in using too little iodine. The operation was so simple, and had been so long employed, that he thought one or both of these errors were very frequently made. His own experience had led him to believe that, if the fluid was evacuated entirely, and the injection made very fully, using half an ounce instead of a drachm, as was frequently used, of iodine, the success was very great.

TWO CASES OF ALEXANDER'S OPERATION OF SHORTENING THE ROUND LIGAMENTS.

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IN June 1884, Dr. Schede showed me in his wards in the Hamburg General Hospital, two cases in which he had performed the operation of shortening the round ligaments for uterine displacement, after the manner then recently suggested by Dr. William Alexander of Liverpool. The latter surgeon has more recently published an article upon the subject in the *ANNALS OF SURGERY* (Vol. I, No. 5. May 1885. P. 426) in which is set forth in a most able and comprehensive manner, the rationale of the procedure.

The exact place which this operation is to hold, in the surgery of the future, must be decided by the report of cases and their results. The object of this communication is to awaken interest in the subject, and to elicit discussion as to its merits and the class of cases for the relief of which it is best adapted.

CASE I. Mrs. B., æt. 30 German, healthy in every respect until birth of child, about 4 years ago; this being her only pregnancy. For a long time after her labor she experienced dragging pelvic pain, with irritable bladder and dysmenorrhœa; the latter gave the history and symptoms of probable mechanical origin. For upwards of two years prior to operation she had been treated with all kinds of devices in the way of pessaries for the relief of extreme retroversion, due, in all probability, to a subinvolution which followed her confinement; although, when she came under my care this condition had, in a great measure, disappeared. No pessary that would remedy the displacement and relieve the bladder symptoms could be tolerated; and when,

in addition to these symptoms, the periodical return of her dysmenorrhoea occurred, her sufferings were extreme. In despair at the prospect of suffering thus for the balance of her menstrual life, she consented to the performance of Alexander's operation as a last expedient. This was done on January 24, 1885, with the kind help of Dr. Walter B. Chase and my regular assistants. No difficulty was experienced in finding the round ligaments and isolating them. Dr. Chase supported the uterus in a state of extreme anteversion by means of a Simpson's sound, and his index finger in the Douglas cul-de-sac. Traction was then made upon the round ligaments of the right side, which resulted in a "slack" of more than 2 inches lying loose at the bottom of the wound. This produced an inversion of the canal of Nuck, and advantage was taken of this circumstance to secure this process of the peritoneum, as well as a portion of the slack in the inguinal canal. It was there secured by catgut sutures, care being taken not to cross the central portion of the ligaments, lest this should be constricted and lead to sloughing by occlusion of the nutrient vessel. The left ligament was then dealt with in the same manner, the slack, however, being not quite so great. The superfluous portion was then cut away and deep sutures of sublimated silk so placed as to include the skin, fasciæ, the external pillar, the portion of the canal of Nuck with its contained round ligament lying in the outer portion of the inguinal canal, the portion of the ligament uncovered by peritoneum occupying the inner portion of the same, and the edge of the external oblique tendon or internal pillar. A few strands of catgut served the purposes of drainage. Bichloride irrigation, iodoform along the line of sutures, a paper wool cushion and firm bandaging completed the dressing. A retroversion pessary was placed in position.

The highest temperature occurred on the third day, when it reached $99\frac{1}{5}^{\circ}$. No pain was complained of after the first few hours. The bladder symptoms at once disappeared, and these, the urgency of which led me to resort to the operation, remained perfectly relieved. The dressings were first removed on the eighth day, and then only on account of an accidental wetting which they received of urine. Union was found to be complete. The silk sutures were removed on the twelfth day. On the twenty-first day she was allowed to recline in an easy chair. On the twenty-sixth day after the operation, menstruation occurred, and *without pain*, lasting three days. Upon cessation of the menstrual flow the pessary was removed.

March 7th. Patient visited my office at my request. She makes no complaint, but upon examination I find the uterus in an almost horizon-

tal position when she stands upon her feet. As she was then upon the verge of a menstrual period, the pessary was again introduced and worn for a fortnight, when it was abandoned, the organ then appearing to rest in its normal position. Within six months after the operation she became pregnant; the utero-gestation seems to be pursuing a normal course.

CASE 2. Mrs. P., æt. 24, Scotland. Married four years. Three months after marriage had an accidental abortion, followed by subinvolution, which finally resulted in a combined retroversion and retroflexion, with dysmenorrhœa. For two years many and various attempts to support the uterus were made, but with very unsatisfactory results. Forcible straightening with dilatation was tried but with no permanent benefit. February 27, 1885, assisted by Prof. Charles Jewett, I performed Alexander's operation in the same manner as in the preceding case. Some difficulty was experienced in finding the round ligaments, but at length these were discovered upon either side well up under the edge of the tendon of the external oblique, and not in the inguinal canal proper at all. About an inch and a half of each ligament was removed after the uterus had been secured as high up as possible. It was noted that the canal of Nuck for about one inch of its length appeared in the outer angle of the wound. Prof. Jewett held the uterus in position by means of a Simpson's sound, but could not satisfy himself that the flexion was overcome; the version, however, seemed to be corrected. Sutures and dressings were applied as in the preceding case, and a retroversion pessary introduced. The same general course was followed, and the patient made a good recovery. The pessary was removed after the first menstruation, which was comparatively painless. Two months afterward, an examination revealed the following: The cervix occupied about its normal position, but the fundus uteri pointed directly backwards. In other words, the flexion persisted, the body of the uterus being almost horizontal, while the retroversion had disappeared. She tolerated the pessary, which I thought it best to temporarily reintroduce, perfectly well, and menstruates almost without any pain. She continues to wear the pessary through fear of relapse.

Remarks. These two cases of Alexander's operation of shortening the round ligaments are offered for what they are worth. In the first case there can be no doubt as to the benefit derived, and this was not due to the enforced rest with a pessary in position, for trial had been made of that method of

treatment before the operation. In fact, a full sized pessary could not be tolerated prior to the lifting up of the uterus by means of the round ligaments. The extreme retroversion with its resulting irritable bladder, dysmenorrhœa and sterility have been cured. In the second case, I regret very much that the patient's obstinacy in refusing to come to my office for the purpose of having the pessary removed, prevents me from passing judgment upon the extent of relief afforded in her case. The fact, however, that she experienced relief from her dysmenorrhœa, even before she wore the last pessary, together with the comfort which she experiences, and which prompts her to continue wearing it, encourage me to think that the operation has been of service to her. It is in this class of cases (retroflexion, with or without retroversion) that we would expect less prompt and decided relief than in cases of retroversion, pure and simple.

As to the rationale of the operation I have nothing to offer beyond the claims made for it by the surgeon who originated it. That traction upon the round ligaments of a retroverted uterus restores and keeps in position the uterus after restoration, does not admit of any doubt. In both of the cases herewith reported, the fact was capable of demonstration. In how far this position can be maintained by the new adhesions which the ligaments form to the structures in and about the inguinal canal; or, these proving stable, how much stretching of the intra-peritoneal portion occurs, permitting a relapse of the displacement, further experience alone can determine. My own fears of failure are based upon the probable occurrence of the latter condition.

A word as to the technique of the operation itself. An eminent gynecologist of New York informed me, a short time since, that he had failed entirely, in an attempt to perform this operation, to find the ligaments. This would have happened in my second case had I not reasoned that the strong dragging upon the ligament had probably made it extremely tense and forced it under the tendon of the external oblique, where, in fact, I found it. The invagination, so to speak, of the peritoneal investment of the ligament known as the canal of Nuck,

and suturing it into the inguinal canal is a feature of the operation I do not remember to have seen elsewhere noticed. It would appear that this would prove an important part of the operation, giving, as it does, additional support to the sutures, and exposing a larger surface for the formation of adhesions.

EDITORIAL ARTICLES.

THE TREATMENT OF ANEURISM BY THE INTRODUCTION OF COAGULANTS.

The case recently reported by Dr. Cayley of an aortic aneurism treated by the introduction into the sac of steel wire again raises for discussion this method of dealing with such aneurisms as cannot be treated by other surgical measures.

Dr. Cayley's patient was a man 48 years of age, who had had symptoms of intra-thoracic aneurism for seven months; these were succeeded by a growth of the tumor up into the neck. In spite of Tuffnell's treatment carried out with rigid care, this upward extension of the sac continued and threatened speedy death by external or internal rupture. It was evident that nothing was to be hoped for from either ligature or compression of the branches of the aortic arch. The patient's condition was so urgent that electrolysis did not offer much chance of benefit, and under the circumstances it was determined to repeat the operation which was first of all performed at Middlesex Hospital by the late Mr. C. H. Moore, but with one all-important difference, *to take care that the wire was aseptic*. Accordingly, on June 24, Mr. Hulke introduced into the cervical part of the aneurism about forty feet of fine steel wire. The operation was unattended by accident, and the cervical portion of the tumor became completely consolidated. Subsequently the intra-thoracic portion of the tumor increased and caused dyspnœa and cough, and on September 10, in Mr. Hulke's absence, I repeated the operation and passed nearly thirty-five feet of wire into the sac close above the sternum. The patient died in a paroxysm of dyspnœa on September 19. At the *post-mortem* examination a large aneurism of the ascending part of the arch of the aorta was found; the whole of the upper portion was filled by a clot embedded in

which was the wire ; the lower portion of the tumor consisting of the dilated aorta had compressed and flattened the trachea, and this caused the patient's death.

This result must be regarded as eminently satisfactory ; the patient's life was prolonged for more than two months, and the *post-mortem* examination showed that the saccular portions of the aneurism were filled with clot, and only the tubular dilatation of the aorta was still patent. It is obvious that if the clot had extended into this part and blocked the whole aorta, the effect would have been extremely disastrous. The case is, therefore, doubly valuable, for it illustrates what may and what may not be hoped for from this mode of treatment. It shows that the introduction of iron wire into saccular aneurisms may lead to their obliteration by coagulum, but that fusiform or tubular aneurisms of the aorta resist this as they do other means of cure.

It is the frequent and ever varying association of these two forms of aneurism in the chest that explains the great divergence observed in their course, and in their response to treatment. It must be observed that the consolidation of the saccular parts of these composite aneurisms is of great practical importance for three reasons. It may lessen or remove altogether serious compression of important parts. It removes the danger of rupture of the aneurism, whether externally or internally, and then, in all cases, it lessens the expansile pressure of the blood in the unobliterated part of the aneurism. It is important to bear this in mind, for it is easy to be deceived by the subsequent growth of the aneurism in another direction. The pressure upon the inner wall of an aneurism increases directly with the amount of fluid in the sac, and, therefore, anything which diminishes the bulk of the fluid part of the tumor, lessens the internal pressure upon the entire aneurism. The obliteration of any part of an aneurism is therefore a valuable conservative process, and the failure to occlude the entire tumor does not imply that the treatment has been of no practical value. We have in Moore's operation a powerful means of inducing coagulation within an aneurism. What are its dangers and drawbacks ? First of all must be mentioned that which proved fatal in Mr. Moore's case, septic poisoning. No special precautions were employed in the prepa-

ration of the iron wire Mr. Moore used, and his patient succumbed to an intense local arteritis and general blood poisoning. This is a very real peril, but one that can be easily avoided. Mr. Hulke soaked his wire in liquor potassæ and so rendered it aseptic, others have used carbolized catgut or horse hair which can be purified by carbolic acid solution 5 per cent.

The second danger is embolism, which may arise in one of two ways, either a portion of clot may be dislodged and washed on by the blood stream, or a part of the substance introduced may itself be carried into an artery beyond. It is this latter possibility which I think should preclude the use of horse hair or catgut, which are in several short lengths and are so flexible that they can readily be whisked along by the blood. The best material to use is one which can be introduced in one continuous piece, and which has a sufficient tendency to curl up within the aneurism to oppose the force of the blood tending to carry it on. Nothing fulfills these conditions better than fine steel wire coiled round a slender cylinder; it can be obtained of any desired length, and when passed into the aneurism, at once curls up within the sac and forms an irregular tangled mass around which the blood speedily coagulates. The third danger is the wound of the vein or other important structure at the time of the operation. This is to be guarded against by a very careful examination of the tumor at the seat of the proposed operation, and by only operating upon parts of the tumor which present externally or are far removed from important structures. This is a consideration that must be kept in view. The last danger is that attending any local interference with the sac of an aneurism, the lighting up of acute inflammation around it. The danger of this necessitates the utmost gentleness and care in all the steps of the operation.

The foregoing considerations indicate in what class of cases this method of treatment may be resorted to. External aneurism, with very few exceptions, are susceptible of treatment by other surgical means, but in aneurism in the buttock and in the foot and in some of those in the groin and neck, Moore's treatment is one that may fairly be employed. In internal aneurisms the special indications for its use are, (1) failure of carefully carried out constitutional means to excite coag-

ulation ; (2) rapid growth of the aneurism with threatened rupture of the sac ; (3) the saccular form of aneurism in whole or in part ; (4) and the superficial position of part of the sac. This last condition was notably wanting in a case of abdominal aneurism (Loretta's) in which a laparotomy was first performed, and the aneurism exposed, and then the wire was introduced. In other words, the cases in which Moore's treatment is suitable, are those for which electrolysis has been advocated.

The operation itself is one of great simplicity. A Southey's canula without lateral holes is the best instrument to use, and care should be taken to have it of such a calibre that the wire to be introduced passes through it without undue friction. Steel wire that has been coiled around a cylinder of not more than one-half inch in diameter, and subsequently rendered aseptic by immersion in liquor potassæ, is the best material to employ. In "feeding" it through the canula care should be taken when uncoiling the wire not to get it into "kinks," as they catch in the canula. The wire should be steadily passed in until a distinct sense of resistance is observed. Having cut the wire at the outer end of the canula, that part of it still lying in the canula is most easily pushed into the aneurism by introducing the *blunt* end of Southey's trocar—this fits the canula exactly and with certainty pushes the wire before it. This little manœuvre is useful, as it is important not have the outer end of the wire projecting through the sac. On withdrawing the canula the puncture in the skin is to be closed with a pledget of lint fixed in place with a strapping or a fine pin and figure of 8 suture. An anæsthetic is not necessary, and in many of the cases calling for this treatment is best dispensed with. The operation may be without any apparent results upon the tumor for two or three days, but after that time the pulsation should become less marked, and the tumor firmer. In addition to the two Middlesex Hospital cases, a similar operation has been performed by Dr. Lewis for subclavian aneurism (horse hair), by Mr. Bryant for popliteal aneurism (horse hair), by Dr. Rubie for innominate aneurism (wire), by Baccelli—two cases, by Von der Meulen, for brachial aneurism (catgut), and by Loretta for abdominal aneurism (wire).

The extreme gravity of the cases in which this treatment would be employed precludes in almost all cases the hope of more than a palliative effect, but in view of their hopeless character, this consideration ought not to prevent a fair trial of a measure which appears to be attended with very little risk, and may prolong life or afford distinct relief. As compared with electrolysis the introduction of steel wire is simpler, requiring no special apparatus, more certain to cause coagulation and probably safer.

A. PEARCE GOULD.

EXCISION OF THE HIP JOINT.

This operation, which, before the beginning of antiseptic surgery, had such a high mortality as to be looked upon with much suspicion, and even condemned by a great number of surgeons, has since that time lost many of its dangers, and there is not now any more any question about the propriety of the operation, but there still exists a wide difference of opinion as to the time, in the course of the disease, most suitable for surgical interference.

It will be necessary to refer, in a brief manner, to the pathological conditions present in these cases, as a careful consideration of them may serve to determine the expediency of surgical interference, and the time when the same should be undertaken. In view of the light which has been thrown upon this subject by recent investigations by Kiener, Paulet, Becker¹ and many others, we are justified in assuming, I think, that the coxitis in children we meet with, is almost invariably of tuberculous origin. The pathological conditions present in these cases are, of course, like those of tuberculous inflammation in other joints. The inflammation may primarily attack the synovial membrane, but more frequently the bones entering into the formation of the joint are first involved.

In synovitis tuberculosa circumscribed, fungous, gray granulations make their appearance, infiltrating the synovialis and causing hypermia and swelling of that membrane.² The synovial fluid becomes turbid, and

gradually changes into pus; at times the quantity of the fluid is not increased, but more frequently the capsule becomes distended with rapidly accumulating pus. The softened and disorganized membrane, being unable to resist the pressure of the accumulated fluid, ruptures, the pus burrows its way to the periphery and abscesses occur. After the articular cartilages have become destroyed, the bony structure of the joint becomes infected. But more frequently the tuberculous inflammation begins in the bone. The cancellous tissue is, as a rule, first invaded by grayish granulations, which may be encysted for a time, but the bony partitions dividing them rapidly disappear, forming masses which undergo caseous degeneration.³ The osseous tissue surrounding these foci becomes infiltrated and softened, abscesses in the bony tissue appear, the cancellous spaces become filled with caseous matter and pus, the bone becomes thickened, and necrosis ensues. If the bone be now sawn through, it will be found to be of a dirty white color. At times the osteomyelitis does not extend into the joint, but generally the joint becomes infected. When the entire joint is attacked by this inflammation, the articular cartilages, the ligamentum teres and the synovialis are disorganized and destroyed, the head of the femur will be found to a greater or less extent absorbed and irregular in outline. The acetabulum, in the advanced stages, is not infrequently perforated, and the lateral portions may be entirely destroyed, favoring the slipping of the head of the femur out of the joint, and in this manner, producing at times, spontaneous dislocation of the femur.⁴ Not every case pursues this course, for the reason that the spontaneous cure may occur at any stage of this affection.

The clinical phenomena of coxitis have been divided into three stages. In the first stage there is some limping and pain in the affected limb; the second stage is the stage of abduction and outward rotation, the limb is slightly flexed and apparently elongated; in the third stage the extremity is adducted and rotated inwards, the limb is actually shortened and the joint disorganized.

In the earlier stages of coxitis horizontal extension with absolute fixation of the joint will prove most successful, and only after the progress of the disease has been entirely arrested, should patient assume

the erect posture, but must wear some apparatus, which will keep the joint at rest.⁵ Taylor's or Sayre's apparatus will answer best for this purpose. Abscesses should be freely opened, old sinuses scraped out, and drainage tubes inserted into them. When the presence of dead bone can be determined, the same should be gouged out, and loose sequestra removed. All these minor operations should be performed antiseptically. If, upon the adoption of these measures, the discharges diminish, the caries of the affected bones does not extend, and the general condition of the patient improves, nothing else need be done. From what has already been said in the brief account of the pathological conditions present, it can readily be inferred that there is a certain number of cases, who, in spite of the best mechanical and expectant plan of treatment, grow constantly worse.

When the disease extends, the bones of the joint becomes more and more involved, more sinuses form, and more pus is discharged, the local condition becomes constantly aggravated, and the constitution of the patient undermined. The most conservative surgeon, I think, will concede that the complete exsection of all necrosed bone, together with the establishment of thorough drainage, is now called for, that is, if there be not present some constitutional trouble, such as tuberculosis of the lungs, etc., to contra-indicate surgical interference.

I have related in the above the usual method of treatment pursued in coxitis, and it is shown that excision is resorted to only after all other means have failed, as a last resort.

What does an operation promise?

1. By removing the source of irritation, it will relieve pain and suffering.
2. For the same reason it will check the suppuration and prolong life.
3. It may arrest the disease.
4. It may secure the patient a useful limb.
5. It may prevent general tuberculous infection.

The four first propositions will be readily conceded as the possible or probable result of the operation, but the fifth one meets with considerable opposition. It is claimed that tuberculosis is still the most

common cause of death after the operation, and that hence the same grants no immunity from tuberculous infection. But with as much propriety and reason, it might be urged, that the extirpation of a cancerous tumor is contra-indicated for the reason that most patients succumb to cancerous dissemination, even after the tumor has been extirpated. In the light of recent investigations it would seem reasonable to hold that a tuberculous focus may disseminate and infect the system, and to assume that a complete destruction, extirpation or excision of this focus, whenever this is possible, is a rational procedure.

What are the dangers of the operation?

Mr. Bryant, in his "Practice of Surgery," speaking of the dangers of excision of the hip, says that in these cases the joint, as a joint, has disappeared, and that there seems to be no more danger in an operation, undertaken upon the hip joint, than in any severe operation for necrosed bone.⁶ In a general way it may be asserted that the advent of antiseptics into surgery has had a most favorable effect upon the mortality of resection of the hip, that since that time the mortality of the operation per se has been reduced to less than five per cent., and that the greater number of those cases that prove fatal after excision, perish in spite of the operation, that is, as a result and extension of the disease. The dangers of the operation in children have, therefore, been reduced to a minimum. This will naturally suggest the question if excision of the hip has ceased to be a very serious operation, are we justified in postponing the same till the disease has caused so much destruction and mischief as to preclude the possibility or probability that the patient will make a good recovery after the same is undertaken, or, in other words, does early surgical interference offer better results than the expectant plan of treatment.

Dr. L. M. Yale, of New York, in a paper on excision of the hip in the *ANNALS OF SURGERY* for January, 1886, has collected statistical reports upon this subject, and these differ widely as to the relative merit of early surgical interference and the usual expectant plan of treatment. The following statistics by Grosch, however, which I have taken from the paper of Dr. Yale, on 166 cases, treated antiseptically, constitute, in my opinion, a powerful plea for early surgical interference. Dr. G.

divides his cases into three classes. The first class contains those operated upon while there were but slight changes in the joint; the second, cases with suppuration, abscesses and fistulæ; and the third, cases with complete destruction of the joint, extensive necrosis of bone, and great debility. In the first class there were four children no mortality; for the second, the mortality was 24.1 per cent., and for the third, 67.5 per cent. Billroth, Koenig, Sayre, Hueter and others, all favor early operations. The latter says: "I hold that resection of the hip joint in coxitis to be indicated as soon as extensive suppuration of the joint manifests itself, or as soon as the course of the disease shows that the termination in suppuration can no longer be prevented," and he adds, that in his opinion, not more than 50 per cent. of those cases heal spontaneously, that reach the second florescence stage."⁷

Dr. G. A. Wright,⁸ Manchester, from an extensive experience, arrives at the conclusion that in every case where there is suppuration of the joint and thickening of the trochanter, excision ought to be performed; where once this chronic osteomyelitis is established, nothing short of excision can prevent the ultimate progress of the disease." Mr. George Cowell⁹ thinks the operation should be performed without loss of time in cases of profuse suppuration and failure of health." Prof. Eugene Boeckel¹⁰ hold that "early resection is the surest method of curing quickly and well a case of suppurative coxitis;" Dr. William Alexander¹¹ suggests that "the joint should be excised as soon as a decided second stage of hip disease has been reached;" Mr. Gant, in his Lettsomian Lectures, states "whenever the health is failing, whatever stage the joint is in, excise."¹² All these eminent authorities evidently favor early resection.

To recapitulate, the reasons which might be urged in favor of early excision of the hip joint in the coxitis of children, are the following:

1. The mortality of early operations is almost nihil; the death rate increases *pari passu* with the extension and duration of the disease.
2. Early resection arrests the course of the coxitis, and effects a more rapid cure than the rest and mechanical treatment.
3. The results as regards the usefulness of the extremity are better after early excision than after the expectant plan of treatment.

4. There is reason to suppose that early operative interference may prevent general tubercular dissemination.

The time most suitable for excision has arrived when suppuration exists and persists in spite of rest, mechanical and hygienic treatment; when fever exists, which may be explained by the presence of fetid pus; as soon as the general health of the patient begins to fail.

H. H. VINKE.

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5. Willard, *New York Med. Jour.*, Dec. 1885.
6. Vinke, *St. Louis Courier of Medicine*, Dec. 1885.
7. L. M. Yale, *Med. News*, Nov. 28, 1885.
8. G. A. Wright, Manchester, Eng., *Archives of Pediatrics*, March, 1886.
9. Cowell, *British Med. Journal*, Aug. 26, 1882.
10. Prof. Eugene Boeckel, at the Congres Francais de Chirurgie, *Med. News*, May, 1885.
11. Dr. Wm. Alexander, *The Liverpool Medico-Chirurgical Jour.*, July, 1885.
12. G. A. Wright, loc. cit.

ON THE PRESENT STATE OF KNOWLEDGE IN BACTERIAL SCIENCE
IN ITS SURGICAL RELATIONS.

(Continued from Page 511.)

F. TUBERCULOSIS.

In the present stage of development of bacterial knowledge, when there still remain so many facts and conditions to be ascertained, so many important questions to be solved, before bacteriological doctrines can be admitted without reserve into our handbooks of clinical medicine, it affords a certain pleasure to contemplate the few chapters of bacterial science which treat of such forms of micro-organisms as have already by their never-failing presence in the tissues become a recognized clinical feature of certain diseases.

Thus anthrax and tuberculosis are now diagnosed wherever their respective bacilli are found, and the diagnostic significance of their presence is admitted even by those who are inclined to skepticism in regard to the etiological rôle played by them.

The chain of experimental evidence, however, even as to the question of etiology is so complete, that it is only those who have not been occupied with the practical study of the subject that deny its convincing power. Tubercle-bacilli have been found wherever tuberculous disease was present, they have not been found in healthy or in otherwise affected tissues; they have been cultivated in pure cultures on suitable soils, and have produced tuberculous disease whenever inoculated into the animal body—by means of injection as well as of inhalation; and from these inoculations the original cultures have again been obtained. In some few recorded accidental cases the inoculation experiments have been proved to hold good of man as well.¹

¹Vide *E. A. Tscherning*, "Inoculations tuberculose beim Menschen," *Fortschritte der Med.* Vol. IV. P. 65, where a case is given of a healthy person who acquired tuberculosis through infection of a wound caused by breakage of a glass expectorating vessel, the contents of which closely resembled a pure culture of tubercle-bacilli.

See also *Kraske*, *abst. this vol.* P. 156.

The discovery of the tubercle-bacillus is attributed to R. Koch, of Berlin, who announced his discovery at a meeting of the Physiological Society, of Berlin, in April, 1882.¹ But it was not until nearly two years after this date that his celebrated paper on the subject² appeared in the second volume of the *Mittheilungen aus dem Kaiserlichen Gesundheitsamte*.³

This paper is most instructive and highly interesting to read. We learn from it that Koch had deliberately instituted a methodical search for parasites in tuberculous affections after weighing the circumstantial evidence of their presence adduced by the researches of Buhl, Ponfick and Weigert on miliary tuberculosis, and the pathological experiments of Klencke, Villemin, Klebs and Cohnheim and Salomonsen.

The paper, indeed, evidences astonishing diligence and application.

The first part, treating of the examinations made of pathological specimens, contains an account of how the author found the bacillus in forty-eight cases of pulmonary and miliary tuberculosis, and in sixty-four cases of surgical tuberculosis, the latter including twenty-one cases of scrofulous lymphatic glands, twenty-three cases of tuberculous bones and joints, four cases of lupus, and sixteen cases of tuberculous organs, including the uterus, bladder and testicles.

In like manner he examined specimens from a large number of animals. He furthermore produced artificial tuberculosis in over 500 animals, and examined them all thoroughly. Of the bacillus he produced forty-three pure cultures, some of which he continued through over thirty generations, occupying a period of two years. Infections with pure cultures, the foundation-stone upon which all bacteriological structures rest, he performed on 217 guinea-pigs, rabbits, cats and field-mice alone, besides a large number of other animals.

Koch's discovery was very soon corroborated by various authorities; in England by Watson Cheyne;⁴ in Germany by Ehrlich, P. Baumgar-

¹ Lancet. 1882. I. P. 655.

² "Die Ätiologie der Tuberculose." P. 1.

³ Lancet. 1884. I. 443.

⁴ Report on the Relation of micro-organisms to Tuberculosis. Presented to the Association for the Advancement of Medicine by Research. Feb. 1, 1883. The Practitioner, April, 1883. Abst. Lancet, 1883. I. 444.

ten and others, the latter demonstrating anatomically how after inoculation of the cornea the bacilli first multiply and subsequently become surrounded by epithelioid cells, in which manner tubercles are formed, corresponding to the number of bacilli.¹

On the other hand, however, there was no lack of writers who were in opposition to Koch and did not hesitate to attack his methods and conclusions. Spina², Schottelius, Dettweiler and Formad, of Philadelphia, were among his first opponents, against whose attacks Koch easily defended himself in his reply in the *Deutsche Medicinische Wochenschrift*.³ Formad, who believed that inoculation-tuberculosis could be produced by irritation alone, subsequently became satisfied of the specific nature of the disease⁴—a literary history somewhat similar to that which attaches to the views of Williams⁵ and others in England—while Spina had simply designated Koch's observations as errors, and like the others, could not maintain his assertions.

Some authors, when Koch's views were first made known, attempted to attribute tuberculosis to species of micro-organisms other than Koch's bacilli, but were not successful. Among these were Toussaint⁶ and Klebs⁷; while Malassez and Vignal⁸, who described a disease resembling tuberculosis but differing in the micro-organisms found, appear to have observed a disease identical with the pseudo-tuberculosis of Eberth,⁹ a disease affecting rabbits and presenting a course similar to tuberculosis, but produced by a distinct species of bacilli.

All such communications were, however, far outweighed by the mass of literature which appeared in corroboration of Koch's statements.

The presence of the bacilli in phthisical sputum (as being the most

¹ Ueber den Nachweis der pathogenen Bedeutung der Tuberkelbacillen auf anatomisch-histologischen Wege." *Centralbl. f. d. medicin. Wiss.* 1883. No. 42.

² "Studien über Tuberkulose." Vienna. 1883. W. Braumüller.

³ *March.* 1883.

⁴ *Americ. Jour. Med. Sci.* Jan. 1885. *G. M. Sternberg.* Injection of finely powdered inorganic material into the abdominal cavity of rabbits, etc.

⁵ *Lancet.* Dec. 1883. P. 991.

⁶ *Lancet.* 1883. I. 444.

⁷ *Archiv für experiment. Patholog.* Vol. 17. P. 1.

⁸ *Tuberculose Zoogloëique (Forme ou espèce de tuberculose sans bacilles).* *Arch. d. physiol.* 1883. P. 370.

⁹ *Der Bacillus der Pseudo-tuberculose des Kaninchens.* *Fortschritte der Med.* Vol. III. P. 719.

easily accessible specimen of tuberculous pathology), and the relation of their number to the malignity of the process and to prognosis, were the first questions which received attention.

After Ehrlich¹—Lichtheim,² Ziehl,³ Balmer and Fraentzel,⁴ (over 500 cases),⁵ Crämer,⁶ Menche,⁷ in Germany; Heron,⁸ Dreschfeld,⁹ Williams,¹⁰ and others in England testified to the presence of bacilli in the sputum in those forms of tuberculous disease of the lungs, in which destructive processes were going on, communicating with the bronchi, and it was repeatedly pointed out¹¹ how examinations, to be trustworthy, should be repeated on successive days, since mistakes in prognosis might otherwise occur.

The presence of the bacilli in so-called cheesy pneumonia corroborated the theories as to its tuberculous character, while on the other hand their absence in chronic pneumonia proved this form of consumption not related to tuberculosis.

Hiller¹² first found bacilli in the early hæmoptysis of tuberculosis, proving that hæmorrhage was the effect and not the cause of the disease.

Rosenstein¹³ and Babes¹⁴ found the bacilli in the urine in cases of specific disease of the genito-urinary tract; Crämer,¹⁵ Lichtheim¹⁶ and

Vide notes on tubercle-bacilli. Fortschritte der Med. Vol. I. April 15. 1883. By C. Friedländer.

² Diagnostische Verwerthung der Tub. Bac. Fortschritte der Med. I. P. 4.

³ Zur Lehre von den Tub. Bac. etc. Deutsche Med. Wochschrft. 1883. No. 5.

⁴ Ueber das Verhalten der Tub. Bac. im Auswurf etc. Berl. Klin. Wochschrft. 1882. No. 45.

⁵ O. Fräntzel. Wie weit können wir den nachweis von Tub. Bac. etc. verwerthen? Deutsch, militärärztl. Zeitschr. August. 1883.

⁶ Die diagnost. Bedeutung der Tub. Bac. Sitzungsberichte d. phys-med. Societ. in Erlangen. Dec. 1882.

⁷ Ueber die Tub. Bac. etc. Vortrag. geh. i. d. med. Sek. d. Niederrhein. Ver. f. Natur. u. Heilkunde.

⁸ Lancet. Feb. 1883. P. 188.

⁹ Brit. Med. Journal. 17. Feb. 1883.

¹⁰ Lancet. 1883. I. P. 312.

¹¹ Fraentzel, l. c. Leyden, klinisches über Tub. Bac. Zeitschr. für klin. med. 1884. VIII. 5 Hft.

¹² Ueber initiale Hæmoptoë, etc. Deutsch. Med. Wochschrft. 1882. No. 47.

¹³ Vorkommen der Tub. Bac. im Harn. Centralbl. f. d. med. Wiss. 1883. No. 5.

¹⁴ Vide. Fortschr. d. med. Vol. I. April 15. 1883.

¹⁵ l. c.

¹⁶ Fortschritte der med. Vol. I. P. 4.

De Giacomini¹ were able to trace them in faecal matter under similar conditions; and Weichselbaum,² Meisels³ and Lustig⁴ found them in the blood in cases of acute miliary tuberculosis, both during life and after death.

Soon after the search for these parasites in the sputum had proved so successful, interest began to attach to their presence in surgical affections, a subject of more special interest to us here.

Schuchardt and Krause⁵ examined forty cases of tuberculosis of bones, joints, tendon-sheaths and the skin in Volkman's clinic, and found them always present, though the search for them was often tedious. They found them present in abscess membranes, tuberculous granulations, tuberculous lymphatic glands, and in tuberculous organs, such as the tongue, the uterus, the Fallopian tubes and testicles.

Schlegtendal⁶ now examined 520 specimens of pus from tuberculous suppurations, and was able to testify to the presence of bacilli in about 75 per cent. of the cases.

Möglings⁷ found bacilli in all (53) the surgical cases he examined in the Tübingen clinic and Mueller⁸ also corroborated the statement made by Krause and Schuchardt. In France, too, Brouilly⁹ published similar results.

Koenig in his work on tuberculosis of bones and joints¹⁰ refers to the presence of the bacilli in these diseases, although he could not always find them.

¹ Die diagnostische Bedeutung des Nachweises der Tub. Bac. im Stuhl. Fortschritte der Med. Vol. I. P. 145.

² Ueber Tub. Bac. im Blut, etc. Wien. Med. Wochschrft. 1884. Nos. 12, 13.

³ Weitere Mittheilungen, etc. Wien. Med. Wochschrft. 1884. Nos. 39, 40.

⁴ Ueber Tub. Bac. im Blut, etc. Wien. Med. Wochschr. 1884. No. 48.

⁵ Ueber das Vorkommen der Tub. Bac. bei fungösen und scrofulösen entzündungen. Fortschritte der Med. Vol. I. P. 277.

⁶ Ueber das Vorkommen der Tub. Bac. im eiter. Fortschr. der Med. Vol. I, P. 537.

⁷ Die chirurgischen Tuberkulosen. mittheilungen a. d. chir. Klinik zu Tübingen. Tübingen, 1884. H. Laupp.

⁸ Ueber den Befund von Tub. Bac. bei fungösen Knochen u. Gelenkaffectionen. Centrbl. f. chir. 1884, No. 3.

⁹ Note sur la présence des bacilles dans les lésions chirurg. tuberc. Rev. d. chir. III. No, 11, Nov. 1883.

¹⁰ Berlin, 1884. Hirschwald.

The tuberculous nature of lupus long surmised from histological analogy (Friedlander) was clinically further elucidated by the finding of tubercle-bacilli in the affected skin by Demme¹ and Doutrelepout (25 cases²) Cornil et Leloir³ and Pagenstecher and Pfeiffer⁴ also wrote on this subject. Orthmann⁵ found bacilli in the lymphatic glands communicating with a tuberculous mammary gland, and milk of cows similarly affected is well known to contain bacilli.⁶ Eschle,⁷ Voltoni and Nathan have traced tuberculous otitis by means of bacilli contained in the pus discharged.

Quite recently the discovery of tubercle-bacilli in hygromata and tendo-synovites with oryzoid corpuscles or melon-seed bodies by Nicaise, Poulet, Vaillard,⁸ and also in the warty skin affections of pathological anatomists by Karg⁹ and Riehl¹⁰ has led to the discovery of the probable tuberculous nature of these affections, although the infection may be a mixed one.

Giesler¹¹ on the other hand was not able to find bacilli in the infiltrations and abscesses of the integument in scrofulous children, and believes them not to be tuberculous in nature.

Soon after Koch's discovery had thrown some light upon the etiology of tuberculous disease, various efforts were made to find a therapeutic agent capable of directly attacking the organized virus; and such a

¹Vide note in Fortschritte der Med. Vol. I., April 15. Beil.

²Tuberkel Bac. in Lupus. Monatshefte für pract. Dermatol. 1883, No. 6.
Aetiologie des Lupus vulgaris. Vierteljahrsschrift für Dermatol. u. Syphilis, 1884.

³Recherches expérimentales et histolog. etc. Arch. de physiol. norm et path. 1884. No. 3.

⁴Lupus oder Tuberculose? Berl. Klin. Wochschrft. 1883. No. 19.

⁵Ueber Tuberculose der weibl. Brustdrüse, etc. Virchow's Archiv. Vol. 100. III.

⁶Bang. Ueber tuberkulöse Milch. Deutsch. Zeitschrift f. Thiermed. u. vergl. Path. XI. P. 45.

⁷Bollinger. Ueber Tub. Bac. im Enter, etc. Münchener ärztl. Intell Blatt. No. 16. 1883.

⁸Habermann. Mittheilungen über Tuberculose des Sehörorgans. Prag. Med. Wochschrft. 1885. No. 6.

⁹Nature tuberculeuse des Hygromas, etc. Revue de chir. V. No. 8. 1885. P. 609.

¹⁰Tuberkel-Bacillen in einem sogenannten Leichentuberkel. Centralbl. f. chir. 1885. No. 32.

¹¹Ibid. No. 36. Riehl u. Peltan. Vierteljahrsschrift für Dermatol u. Syphilis.

one Buchner¹ believed to have found in arsenic. His statements deduced from six cases were partly corroborated by Kempner,² who published twelve cases. But Stintzing's work³ founded on twenty-two cases soon dispelled the hopes awakened by these publications and proved arsenic to be rather more harmful than beneficial.

A similar recommendation of arsenic for surgical tuberculous affections was published by Landerer.⁴

The question as to the hereditary transmission of tuberculous disease was also much agitated in consequence of the bacillary doctrine, and is still at the present time unsettled.

Favorers of the theory of infection found no difficulty in illustrating the possibility of infection which obtains in the homes of tuberculous individuals, reasoning by analogy from the numerous experiments by which animals were rendered tuberculous by inhaling dust containing tubercle-bacilli,⁵ and sanitary measures to destroy the highly infectious nature of the dried sputum of phthisical patients were insisted upon by hygienists—a one in twenty carbolic acid solution being found the most efficient disinfectant, an equal amount being added to the sputum and left in contact with it for a period of twenty-four hours.⁶ It was repeatedly pointed out that in Italy phthisis had always been looked upon as a contagious disease, and cases of acquired pulmonary phthisis by healthy individuals were published in the periodicals.⁷

On the other hand unimpeachable cases of transmittal of the disease in utero were published by authorities on this question,⁸ so that there

¹ Die subcutanen Kalten Abscesse, etc. Jahrb. für Kinderheilkunde. Vol. 23. H. 2. P. 37.

² Die ætiologische Therapie etc. der Lungen-tuberculose. München und Leipzig. 1883.

³ Ueber die Behandlung der Tub. mit Arsen. Berlin. Klin. Wochschrft. 1883. No. 31.

⁴ Zu Buchner's ætiolog. Therap. etc. ärztl. Intell. blatt. 1883. No. 30.

Centbl. f. Klin. Med. No. 32. 1883.

⁵ Centralblatt f. Chirurg. 1883.

⁶ Koch. Ätiologie der Tuberculose, l. c.

Veraguth. Experimentelle Untersuchungen über Inhalations tuberculose. Archiv. für experim. Pathol. u. Tharm. Vol. 17.

⁷ Schill and Fischer. Mitheil. a. d. Kaiserl. Gesundheitsamte. P. 131. Vol. II. Berlin. 1884. Hirschwald.

⁸ Herterich. Ein Fall von Fütterungs tuberculose, etc. Münch. ärztl. Intell. blatt. 1883. No. 26.

appears to be little doubt but that both methods of acquiring tuberculosis are possible.

New and altered methods for staining the tubercle-bacilli have been repeatedly suggested¹ since the method of Ehrlich-Weigert was first adopted by Koch. But most of the proposed methods proved to be either unreliable, or at least unimportant, such as the suggestion of transferring the cover-glasses with the adherent bacilli from the solution of fuchsin in aniline-water directly into a mixture composed of absolute alcohol (50 parts), distilled water (30 parts), pure nitric acid (20 parts) and methylene blue (10 parts), and leaving it there for a few seconds before washing it out, instead of first using dilute acid for discoloration and afterwards staining with the blue color.

A more important suggestion, however, has been lately made by Neelsen, of Rostock,² which is especially time-saving, since it does away with the tedious preparing of the aniline-water in each successive examination. The directions are as follows: The cover-glasses with the fluid specimen dried onto them and rendered adherent by direct application of moderate heat, are placed in a solution composed of one part of fuchsin (rosanilin), 100 parts of a five-per-cent. aqueous solution of carbolic acid, and ten parts of alcohol. This mixture is then to be heated until fumes arise; in this mixture, which may be preserved for any length of time, the staining is rapidly accomplished. The glasses are then to be washed in diluted sulphuric acid (25 per cent.), colored with methylene blue, washed again, dipped into cedar-oil and mounted in Canada balsam, prepared without chloroform. The same process may be used for sections, five to ten minutes sufficing to stain them at 65° F., and alcohol being used for washing off the superfluous coloring. The use of palladium chloride for the purpose of fixing the colors to prevent the subsequent fading of the stained bacilli has also proved of much value.

Especial attention is necessary when staining fatty secretions to avoid

¹ *Johne*. Ein Zweifelloser Fall von congenitaler Tuberculose. Fortschritte der Med. Vol. 3. P. 198.

² *Ziehl*. Deutsch. med. Wochschrft. 1882. No. 33. 1883. No. 17, etc.

³ Published by *Johne*. Fortschritte der Med. Vol. III. P. 200. Foot-note.

⁴ *Bienstock*. Zur Frage der sog. Syphilis-bacillen und der Tub. Bac. Färbung. Fortschritte der Med. Vol. IV. P. 193.

confounding certain other forms of bacilli with the specific tubercle-bacilli. Those of leprosy, for instance, show a similar reaction.

It has also been shown¹ that micro-organisms when triturated with fatty matter are not acted upon by acids and consequently not discolored by their application, probably in consequence of the mechanical qualities of the fatty substances enveloping them.² Such properties of the micro-organisms, however, disappear when they are cultivated in pure cultures, unless the culture soils are especially prepared with butter.³ In any case, however, specific tubercle-bacilli can be distinguished, even from micro-organisms occurring in fatty media, as for instance from those of smegma.

W. W. VAN ARSDALE.

¹ *Matterstock*. Deutsche Med. Wochschrft. 1885. P. 837. Ueber Bacillen bei Syphilis. Mittheil. a. d. med. Klinik d. Univ. Würzburg. Vol. II. Wiesbaden. Bergmann. Vide also *Gottstein's* review of *Alvarez* and *Tavel* and *Klemperer* in Fortschritte der Med. Vol. IV. P. 141.

² *C. Friedländer*. Ueber die färberische Reaction der Tuberkelbacillen. Fortschr. d. Med. Vol. IV. P. 196.

³ *Bienstock*. Zur Frage der sog. Syphilisbacillen und der Tub. Bac. Färbung. Fortschritte der Med. Vol. IV. P. 183.

INDEX OF SURGICAL PROGRESS.

GENERAL SURGERY.

I. How Shall the Physician Disinfect His Hands? By Dr. H. KUEMMELL (Hamburg). In the *ANNALS* for November, 1885, pp. 409 to 412, may be found a full abstract of Kümmel's previous investigations on this point. The different results of Förster (Amsterdam) have induced K. to re-study the subject. Instruments and sponges can be thoroughly disinfected with ease and certainty—not so, however, the hands. Many of the germs floating about are not pathogenic; still K.'s aim is to determine the surest method of rendering the hands quite germ-free. He gives two series of experiments. In the first, the hands to be disinfected were in their ordinary every day condition; in the second, they had been infected with cadaverous or phlegmonous matter. He concludes that for cleansing the hands ordinarily a three minutes scrubbing with warm water and soap and subsequent rubbing in $\frac{6}{10}\%$ thymol, $\frac{1}{10}\%$ sublimate, or 3% carbolic solution, suffices; though to be absolutely sure 5% carbolic or aqua chlori one-half reduced is necessary. After changing bandages and the like it is necessary to go through the whole procedure again, if we wish to have the hands quite germ-free. Infected hands require five minutes scrubbing with soap and warm water, and then two minutes scrubbing in carbolic or in chlorine water. He differs from Förster in not finding $\frac{1}{10}\%$ sublimate solution an invariably complete disinfectant in all cases.—*Centbl. f. Chirg.* 1886. No. 17.

NERVOUS AND VASCULAR SYSTEMS.

I. Cure of a Spina Bifida. By Dr. J. DOLLINGER. On the 6th of February, 1886, D. presented to the "Society of Physicians" in Budapest, a girl of five years in whom he had cured lumbo-spinal hy-

dromeningocele by extirpation of the sac and osteoplastic closure of the vertebral opening. She was born with a nut-sized tumor in place of the V lumbar vertebra, and did not walk until her second year. At that time tapping caused an inflammation of the covering skin, and was not repeated. When she was brought to him last November, the tense translucent swelling had a circumference of 36 ctm. Bilateral spastic club-foot contracture, incontinence of urine and fæces. D. aspirated and found that emptying the sack caused no nervous symptom, but relieved the contracture and incontinence until the sac refilled. He then concluded to operate. He slit the sac, the inner membrane of which was a continuation of the spinal dura. Through the opening several thin and one 3 mm. thick nerves passed to the sac; these were cut off short.

The dura was cut away, leaving just enough to close the opening. It was then sewed over the nerve stumps. The sutured dura was next freed from the edges of the hole, sinking back into the spinal canal.

The two lateral rudiments of the fifth lumbar spinous process were broken over and sutured in the middle line. External sutures closed the whole in.

The operation was well borne. The bones immediately united. The skin cicatrized after throwing off a small slough. She can now retain 100.0 to 150.0 urine; the spastic foot contractures have not returned, and she is running around all day.—*Wien. Med. Woch.* 1886. No. 7.

II. An Aneurisma Racemosum Arteriale Cured by Subcutaneous Injections of Alcohol. By Dr. E. PLESSING (Leipzig). This had developed on the back of the head from a wound in childhood. The man was now 21 years old. Previous ligatures of afferent vessels had not accomplished anything. The growth of pulsating vessels was now as large over as the palm of the hand. Electropuncture was tried first, but this proved futile.

At first injections of 30% were used, soon increasing to 75%. Greater concentration was too painful.

The injections, four to six at a time, were repeated every other day. Seven weeks sufficed to nearly obliterate the whole. An erysipelas set

in, but he was discharged a month later cured of both troubles.—*Arch. f. klin. Chirg.* 1886. Bd. 33. Heft. 1.

W. BROWNING (Brooklyn).

III. On Paralysis of the Radial Nerve, Following Fractures of the Humerus. By M. POULAIN (Paris). Lesions of two kinds have to be considered, those produced during the accident by the fragments of bone pricking, stretching or squeezing the nerve, those coming on when callus is being thrown out in great exuberance. The symptoms in each case are identical, viz., those of paralysis of the radial nerve. Careful manipulation and bandaging will sometimes cause the symptoms to subside, but when they remain, the nerve has no doubt been involved in the callus and cicatricial tissue, and nothing is left but to free it by an operation.

M. Poulain describes a case of compound fracture of the lower end of the left humerus, where in three weeks, when the bone was fairly united, large quantities of callus were found about its external border. There was complete paralysis of the muscles, but some sensibility remained in the region supplied by the radial nerve. Five weeks after the accident an incision was made, using the inner border of the supinator longus as a guide; the radial nerve was exposed, but its upper part was found involved in a dense osseo-fibrous mass, resembling cartilage. Scalpel and gouge were used to scoop this out, and a smooth canal was left for the nerve. Sutures were fixed in the lips of the wound, passing under the nerve, and left for a few days. For six months there was no improvement. In fact some shooting pain in the forearm rather showed there must be some neuritis. But within a year there was almost complete recovery, and the patient was able to do his work. There is no doubt, in this case, the neuritis caused the persistence of the paralysis.—*L'Union Médicale.* April 20, 1886.

L. MARK (London).

HEAD AND NECK.

I. Cases of Tumors of the Head. By Dr. F. SALZER (Billroth's Clinic). (1) *Teratoma sinus frontalis.* Girl of 18 years, who was born with a walnut-sized tumor over the right ala nasi, and with

right-sided harelip and cleft palate. The original seat of the growth was said to have been between the inner canthus of the eye and the side of the nose. It has gradually developed since so that now it has a pear shape, a length of $10\frac{1}{2}$ ctm. and circumference of 25 ctm., with a pedicle 4 ctm. thick. It has forced the eye laterally and shortened the lid opening one-half. The sensitiveness of the tumor has of late greatly diminished. Some headache during very hot weather or on hard work that requires stooping. It is covered by soft, somewhat pigmented skin, through which a few veins are seen. It has the soft, elastic consistence of a lipoma except a hard nodule in the pedicle. The basis of the tumor is limited above by a prominent ridge of bone; this edge of bone can also be felt along the bridge of the nose. The labial and palatal fissure passes through into the right nostril.

On extirpating the tumor it was found to start from the frontal sinus, but not to communicate with the cranial cavity. The pigeon's-egg-sized cavity, representing the frontal sinus was scraped out and the overhanging ridge of bone pinched off. At the same sitting the harelip was operated; subsequently a false palate was fitted, and in three weeks she was dismissed cured.

The tumor consisted principally of fatty tissue enveloped by a thin layer of striated muscular tissue and fascia, and then by thin skin. Small cysts, size of a pin-head to a hazelnut, smooth muscular tissue and peculiarly formed bony nodules were found in the pedicle and frontal portion of the tumor. One of the cysts contained a thick material of lanugo hairs and degenerated epithelial cells. Cubical and cylindrical epithelium, a tubular gland, smooth muscular fibers, two bony diaphyses (no cartilage), etc., were found in the tumor.

He further discusses the great variety of like tumors proceeding from the frontal sinus, their etiology and the probable causal connection in his case between the tumor and the fissure.

(2). *Osteoma cutis*. Healthy man of 28 years. Some four to five years previously he first noticed a small, hard nodule in the skin on the crown of the head. No local injury or other known cause. It gradually spread out to the size of a quarter—the hair over it mostly falling out.

In the vicinity of the coronary suture, 4 ctm. to the right of the median line, was an elevated, firm, easily, movable, keloid-like portion of skin. On removal it was found to consist of bony tissue at no point penetrating through the subcutaneous fat. Microscopically it was found to be true bone limited to the cutis. There were holes for the hair and glands to pass. No relapse thirteen months later.—*Arch. f. klin. Chirg.* 1886. Bd. 33, Hft. I.

II. On the Treatment of Cleft Palate. By Prof. J. WOLFF (Berlin). W. discusses in extenso the various German operative methods of treatment and the different forms of false palate. Since satisfactory results had only occasionally been obtained from surgical interference, artificial apparatus had come to be principally depended on. During the last five or six years, however, Wolff has been uniformly successful—in a series of about twenty cases—by proceeding in the following way: He first closes the palatal defect operatively, at the same time correcting any existing labial and nasal defects. This latter he considers very necessary for improving the patient's spirits and the subsequent acquisition of speech. The patient is then supplied with a special hollow so-called pharyngeal obturator of vulcanized soft rubber. This was described by him in the same Archives (1880). Prolonged and patient vocal instruction has to follow before speech is fully acquired, but finally even singing may be possible, and the person may learn to talk without this false piece.

He operates with the head dependent and lays weight on his plan of methodical temporary wound-compression for limiting hæmorrhage. To do this he makes each cut rapidly and as far as possible at one stroke, and follows by uninterrupted, firm pressure for 3 or 4 minutes with a salicylated pledget size of a potatoe. The head being dependent, stout pressure can be exerted by a finger or spatula. After a few minutes' steady pressure the bleeding usually stops, and we have an almost bloodless operation. Exhaustion does not then follow, and the patient is in a condition to recover rapidly. During the operation and four to five times a day for the first few days he thoroughly rinses the whole oral and pharyngeal cavities—likewise with the head dependent—in consequence of which the wound edges swell much less

and milk, bouillon, etc., can be readily taken.—*Arch. f. klin. Chirg.* 1886. Bd. 33, Hft. 1.

W. BROWNING (Brooklyn).

III. Trephining in Epilepsy Resulting from Old Fracture of the Skull. By HENRY E. CLARK (Glasgow). The author gives the notes of the case of a boy, æt. 12, who six months previously to the time he came under his care began to have epileptic fits, which had resulted from an injury the head received six or seven years before. The mental state of the patient was not quite satisfactory; he could not be said to be idiotic, but he was not so sharp as a boy of his age should be. There was at the time of his admission a depressed cicatrix over the right frontal eminence, evidently the consequence of a fracture of the skull. During the month of October, whilst in the Infirmary, the boy had ninety-two fits; upon some days he had five, every day he had one or more. Before admission the patient had on more than one occasion bitten his tongue when in a fit, and, while under observation in the hospital, he twice created some stir in the ward by being seized with a fit while eating, a morsel of bread thus getting into his air passages, which was only dislodged by the house surgeon promptly inverting him and thumping on the back. Although he was taken into the hospital with a view to trephining being performed, there was so little to indicate any localized lesion of the brain, so slight a reference of the origin of the fit to the site of the injury, and so long a time had elapsed between the injury and the commencement of the seizures, the author had much difficulty in deciding to perform the operation. The operation was performed antiseptically. A crucial incision was made down to the bone at the site of the old injury, and the flaps and the periosteum being turned back, a medium sized trephine was applied, and a disc of bone removed. No spiculum or rough edge of bone was found projecting inwards, the dura mater was healthy, but there was much thickening of the frontal bone at the part where the trephine was applied. The circle of bone removed was reinstated after its inner edge had been beveled off, so as to prevent it pressing on the dura mater; a notch was also cut on the side of it to serve for drainage, and a few pieces of carbolyzed catgut were inserted to act as a

drain. The flaps were then brought together with catgut stitches and the wounds dressed with carbolic gauze. The wound was dressed antiseptically on the third day after the operation. The restored circle of bone united satisfactorily. The patient did well. The fits did not entirely cease, but they diminished in number; the insensibility was incomplete, the convulsives seizure much less marked and shorter in duration; and during the month succeeding the day of operation he had only thirty-three fits. During this month there were several days upon which he had no fits. In the week proceeding his discharge from the hospital he was perfectly free from fits.

For sixteen months after his discharge from the hospital he continued well. Then on four occasions, within a period of five months, he had a slight epileptic attack in bed, which generally occurred early in the morning.

In the course of some remarks, the author draws attention to the expediency of replacing the circle of bone which has been removed by the trephine.—*Lancet*, Feb. 6, 1886.

IV. Tracheotomy Tube, Lodged in the Right Bronchus for Two Days, Removed. By RICKMAN J. GODLEE (London). Tracheotomy was performed on November 19, 1884 upon a male child aged three years and a half, for the relief of dyspnoea from acute catarrhal laryngitis. A tube was worn uninterruptedly until November 16, 1885, when attention was drawn to the child not breathing comfortably, and on examination it was found that the shield of the tracheotomy tube it was wearing had become displaced, and the intratracheal portion could nowhere be found. A bent probe was introduced into the trachea, but no certain evidence of the presence of a foreign body was obtained. Another tracheotomy tube was introduced without difficulty, and the breathing was relieved. Two days later it was found that the breath sounds over the right lung were evidently less than over the left, there were some bronchitic signs, and the temperature had risen to 103° F. A careful search for the missing portion of the tube had been fruitless. It was then inferred that it must be lodged in the bronchus. Chloroform was administered through the tracheotomy tube, and complete anesthesia having been obtained, the tube was removed,

and a pair of curved tracheal forceps was introduced through the tracheal opening, and the missing portion of the tube grasped and removed. The child had no bad symptoms, and was still under treatment for the restoration of the natural manner of breathing.—*Lancet*, Feb. 6, 1886.

H. PERCY DUNN (London).

V. Intubation of the Larynx. By D. BROWN, M. D. (New York), reports 15 cases treated by O'Dwyer in the New York Foundling Asylum by his own method (*vide* ANNALS, Vol. III, page 79), of which four recovered. All of these cases were among foundlings under five years of age, the tube being inserted in every case of severe laryngeal obstruction that occurred in the asylum, without regard to its hopeless character; one-third of the cases were respectively 5, 11, 12, 16 and 23 months of age, all of whom died, four from the extension of the membrane, and one from uræmic convulsions after the disappearance of all laryngeal obstruction. The cases which recovered varied in age from three years to four years and eight months. Among the advantages of the method are enumerated, (1) the fact that the tube requires no attention after its insertion to keep it clean, and if a piece of membrane should close it (which is not likely to happen) the tube is held in place so loosely that it would be immediately expelled; (2) the inspired air is warm and moist, which prevents drying of the secretion in the tube; (3) the head or shoulder of the tube does not rest upon the vocal cords, but just above them on the ventricular bands; there is never any ulceration of the cords, but slight ulceration may be produced by the head and lower end of the tube when retained, but this can do no harm; (4) there is not the slightest danger of the tube slipping through into the trachea; in most cases semi-solid food is well taken from the beginning, and liquid food after a day's experience, although it may occasionally be necessary to feed very young children through a tube.—*N. Y. Med. Rec.*, April 10, 1886.

JAMES E. PILCHER, (U. S. Army).

CHEST AND ABDOMEN.

I. Treatment of Hydated Cysts of the Liver. By M. PAUL RECLUS (Paris). Several observations of late at the Société de

Chirurgie, suggest that this subject is still to be studied. Little is to be hoped in the way of cure from repeated punctures with needles and trochars, although that is always one of the first steps to be taken. M. Reclus shows that the application of caustics followed by the use of a knife or a large trochar is no more free from danger than large incisions involving the peritoneum.

The first French observations on this subject date from the beginning of 1885, when hydatid cysts began to be removed freely. One cyst was dissected out in which were adhesions to the bladder, epiploon, cœcal appendage and abdominal wall. More difficult cases to deal with are those where the cyst is much involved in glandular tissue. Here he prefers incising over the part which bulges most, rather than in the linea alba. The operation is like that for an hepatic abscess.

M. Reclus had last year a patient with an enormous cyst filling part of the abdomen. He made an incision 20 centimetres long just below the false ribs and parallel to them, exposing the surface of the liver. A small scar was found where a trochar had penetrated on a former occasion. The wound was continued into the liver an opening of 10 centimeters in length being made. A huge cavity was found, the fœtid contents of which filled three basins (9 litres). The edges of the wound in the abdominal wall, and the one in the liver were sutured together, and five drainage tubes introduced. Iodoform dressings were used. All went well, and ninety-three days after the operation only the smallest fistula remained to show where an opening had existed which admitted both hand and fore arm into a vast cavity.—*Gaz. Hebdom. de Méd. et de Chir.*, April 9, 1886.

L. MARK, LONDON

II. A New Method of Reducing Hernia (Spontaneous Reposition). By K. NICKOLAUS (Baden). If a loop of intestine be pushed through a small loop of rubber and injected (e. g. by a catheter in one intestinal end) the intestine will distend, but no amount of pressure can drive the water from the other end of the gut. The water will, however, easily flow out on slight traction of the free end of the intestine. It is also often found in the cadaver that a hernia, irreducible intra vitam by taxis, yields readily to slight pulling on the efferent end.

There are various ancient methods of reduction based on this principle—hanging the patient by the heels, suspending from the legs thrown over a nurse's shoulder, etc. These may have been more efficient by causing the subject to faint. These methods had little value, because to make traction effective, the parts must be relaxed, i. e., whatever constitutes at the time the abdominal floor must not be hard or tense.

The best conditions—relaxation of wall with greatest negative pressure—are secured by the knee-shoulder position. Renauleme once recommended taxis in the knee-shoulder position, but this was soon forgotten.

Previous emptying of the stomach, bladder and rectum favors negative pressure. This position may be rendered still more effective by placing a cushion under the knees and rotating the leg on the affected side outwards (thus, according to Hyrtl, enlarging the external inguinal opening).

The difference in pressure between abdominal and hernial cavities aspirates the sac, leading gradually to a return of the sac contents (at first of the intestinal contents and circulatory fluids). Even a slight reduction in the quantity of the same greatly facilitates the return of the remaining parts. Some traction is at the same time exerted. These forces act primarily on the internal opening and are consequently much more effective than manipulation, which acts first on the external.

Cases 1 and 2. Incarcerated inguinal hernia. All the older methods tried in narcosis. Spontaneous reduction, in a little while, about 20 minutes, by this method. (3) Incarceration. Incomplete reduction in like manner—sufficient to leave the gut permeable. (4) A large, old scrotal hernia, not completely reducible in the dorsal position, went back readily in this way. (5) Incarcerated crural hernia in an old woman. Self reduction after twice placing in this position for three-quarters of an hour, alternating with Sim's lateral position. (6) Old man with cardiac trouble. Incarceration for 36 hours. Prolonged taxis. Knee-shoulder position repeatedly during the night although there was no change the next morning, yet manipulation now

succeeded. (7) Incarcerated inguinal hernia in a young man. After he was twice in this position for three-quarters of an hour—Sim's position in the mean time—it had become so soft that the patient pushed it back himself. (8) Irreducible crural hernia (fæcal incarceration). After this position had been retained several hours the symptoms subsided and the gut became permeable. In three cases of internal incarceration this procedure proved of no avail.—*Cent. f. Chirg.* 1886. No. 6.

III. Lindemann's Single Operation for Echinococci of the Abdominal Organs. By Dr. SCHLEGTENDAL (Hannover). This method was first resorted to in 1871, in a case where the cyst was on the point of breaking externally. It was incised and the edges of the cyst stitched over those of the abdominal opening. The sack sloughed out and the patient was discharged cured in two and a half months. Taking his cue from this, Lindemann has to date operated twelve cases in the same manner. He first opens into the abdominal cavity, secures the peritoneum provisionally, and on each side, parallel to the external wound, runs a strong catgut through the liver substance forming the cyst wall. By this means assistants on either side draw the surface of the liver firmly against the opening. The cyst is then incised and its walls sewed so as to cover the abdominal edges.

The operation was first made known through Kirchner's dissertation in 1879. Säger in 1877 published a very similar method. He cut through the abdominal parietes, including peritoneum, sewed the cyst wall in the wound aperture and then immediately opened the sac. In 1880 Landau published a successful operation after Lindemann's plan only that he tied a strong catgut through the liver and abdominal wall, one at each end of the primary cut, before opening the cyst. This operation is sometimes erroneously called Landau's. (*Vide ANNALS.* Vol. I, p. 72).

Knowsley Thornton (1883) surrounds the opening with carbolyzed sponges before emptying the cyst.

S. has collected twelve other cases, making twenty-four in all. This is not, nor is it claimed to be a complete collection, but still it suffices for estimating the value of this procedure. Of the twenty-four twenty

were cured and four died. In one or two of these four there were extensive adhesions which had to be broken up; in the other two death was caused by exhaustive suppuration and metastatic pyæmia. Hence in no case was the fatal result owing to the immediate incision of the peritoneum. A full account is given of one of Lindemann's successful cases.—*Arch. f. klin. Chirg.* 1886. Bd. 33. Hft. I.

ULCERS, ABSCESES, TUMORS.

I. A Case of Exostosis Bursata. By Dr. FEHLEISEN (Berlin), This was one of the lower end of the femur, operated by Bergmann, where the capsule contained a large number of free cartilaginous bodies. F. believes it to be the second analogous case on record.

The exostosis had developed painlessly within a couple of years in a man of 43. Only lately did it begin to trouble him from its size. It was now as large as a baby's head and situated on the outside of the left knee reaching but a few ctm. below the articular plane. On relaxing the external rectus muscle covering it, distinct fluctuation could be made out, as also a hard fixed tumor and a number of smaller movable bodies. On incision a yellowish, tenacious fluid was discharged, besides a number of rice bodies—486 were collected. The capsule—adherent to surrounding soft parts, but not connected with the knee joint—was carefully extirpated and the exostosis removed with chisel and saw. Cure without interruption.

The exostosis consisted of cancellous bone-tissue and was about 3 ctm. high by 5 broad. Its surface was very uneven from knobs and warty excrescences. It had a cartilaginous covering 1 to 3 mm. thick stopping $\frac{1}{2}$ to 1 ctm. from its base.

The capsule was lined with pavement endothelial cells of varying size and form. Two larger pediculated bodies— $1\frac{1}{2} \times 3$ ctm. rest $4\frac{1}{2} \times 7$ ctm. in diameter—with rough surfaces like the exostosis, hung from the edge of the cartilage; they were made up of firm connective tissue and round cartilaginous bodies. Around the edges of the cartilage were villi up to the size of a pea in part with constricted base as though preparing to separate. The little bodies already free, mostly

5 to 6 mm. in diameter, consisted of hyaline cartilage, and beyond doubt originated from the above mentioned villi.

The conditions found in this case, F. cites as demonstrating the view that exostosis bursata originates from the articular and not the intermediary epiphyseal cartilage; against this is their want of connection with the joint whence he is inclined, from this case and the previous one of Billroth's, to adopt Cohnheim's theory of displaced embryonal cells, and to call them teratoma of the knee-joint.—*Arch. f. klin. Chirg.* 1886. Bd. 33. Hft. I.

W. BROWNING (Brooklyn).

II. Ulcer and Cicatrix of the Leg; Flap Transplantation after Maas's Method. By A. G. GERSTER, M.D. (New York). A boy æt. 8, had sustained a compound fracture of the leg about one year before, and at the same time a laceration of the cheek, which resulted in necrosis of a portion of the angle of the mouth, and finally shortening of the mouth, especially at the angle. He found when the patient was admitted into the hospital that there was an extensive circular loss of integument corresponding to the lower third of the leg; that the anterior portion of this loss was marked by an ill-conditioned ulcer which grew larger or smaller according to the variation of external influences. It was thought that undoubtedly the ulcer would not heal, but that in case it did heal by granulation, the constriction caused by a circular cicatrix of so great width, would interfere with the circulation to such an extent as to endanger the integrity of the foot. He then took a flap from the posterior aspect of the other leg, four inches long and two inches wide, with its base upward, which was left adherent. Before the operation each leg was imbedded in a plaster-of-Paris bandage. The left leg was imbedded in plaster-of-Paris only after dissection of the flap up to its base, the flap remaining outside, above the dressing, which was carried over the limb. The two legs, with their plaster-of-Paris splints, were then brought into suitable apposition, so that the posterior flap could be placed upon the defect on the opposite leg, and in this position both legs were secured with an additional arrangement of plaster of Paris inclosing all. Then the child was put to bed, and allowed considerable freedom so far as this apparatus would permit

him, because it was quite sure that no disturbance of the flap could occur. Dampened sponges were placed in the vicinity of the flap, and the region of the flap was invested in several layers of rubber tissue, which was removed once or twice a day, but there was no dressing proper applied to the wound. About an inch and a half of the end of the flap necrosed, but the rest becoming adherent, the cicatrix was covered, and it was now thought that the danger from cicatricial constriction had been removed. A fortnight after the first operation, the pedicle being cut, the plaster of Paris bandages were removed. The ulcer had been prepared for the flap by cutting away the granulations, and the edge of the flap was not in contact with the edge of the ulcer. —*Proceedings N. Y. Surg. Soc.* 1886. March 8.

BONES, JOINTS, ORTHOPÆDIC.

I. Experimental Production of Typical Tuberculosis of the Bones. By Dr. W. MUELLER (Göttingen). It is known that the blood-circulation is the main channel in the development of disseminated tuberculosis. Various facts speak for a like agency in the production of bone-tuberculosis. M. raises the question, "Is it possible by injecting tubercular material into the arterial current in animals to produce disease of the bone, clinically and anatomically equivalent to tubercular focal disease in man?"

He first injected such material into the femoral artery in rabbits, but from sixteen such experiments did not get an available result. In ten other trials he injected the material into the branch of the crural, from which the nutrient arteries to femur and tibia spring; here he had two successes, the animals being killed respectively eight and six weeks subsequently. In one there was a small tubercular depot in the marrow of the tibial diaphysis; in the other submiliary tubercles in tibia and femur, with a small cheesy depot in the former. But to localize the infection it is necessary to inject only the nutrient artery—for which purpose rabbits are too small. He next injected material into the nutrient artery in larger animals by introducing the syringe needle through the main artery, thus leaving normal circulatory conditions. This he did on twenty young goats, five sheep, and two dogs. Dogs and sheep

gave no positive result. In most of the goats (the experiment-wound in all gave a primary union) he succeeded in producing osseous lesions very similar to the focal processes in man. Alterations in the tibial diaphysis were most frequent, circumscribed cheesy or granular depots in marrow or cortex, or more diffuse tubercular osteomyelitis with and without sequestration, also typical focal disease of the articular ends with and without perforation of the joint. To show the analogy clinically with bone-tuberculosis in man he tells of a three months old goat. The wound healed in eight days. Four months later the animal began to limp. An enlargement of the knee joint gradually developed. The animal was killed at the end of thirteen months. Typical tubercular fungus germ, chiefly of the lateral portion of the joint; large cuneiform tubercular focus with wedge-shaped sequestrum in the lateral condyle of the tibia; also a small granulating depot in the median tibial condylus and two in the articular end of the femur. Except in the popliteal glands there was no tuberculosis of any other organ. These experiments support the view that these lesions rest on embolic processes.—*Centbl. f. Chirg.* 1886. No. 14.

II. On the Diagnostic Value of Examinations by the Rectum in Coxitis. By Dr. A. SCHMITZ (St. Petersburg). The determination of the part of the articular apparatus from which a tubercular or acute osteomyelitic process started is of importance, especially in deciding on treatment. Schmitz in this connection recommends rectal palpation of the posterior (inner) surface of the acetabulum, and demonstrates its value by three histories.

1. Boy, æt. 3, symptoms of coxitis with a large abscess above the trochanter. However, under narcosis there was free motion—extreme extension excepted. No crepitation, but a prominence of the third lumbar spinous process suggested the possibility of spondylitis. Exploration by the rectum showed a pronounced circumscribed but non-fluctuating swelling on the portion of the pelvis corresponding to the acetabulum. The operation proved that the process had perforated the socket.

2. Boy, æt. 5. Marked pallor, nephritis, coxitis and gluteal abscess on the left. By the rectal examination an egg-sized abscess was felt

on the posterior acetabular surface. The boy was said to have long suffered pain at each defecation. On opening, the femoral head was found intact, but there was a bean-sized sequestrum at the bottom of the socket and pus in the pelvic cavity.

3. Boy, æt. 5, with severe spondylitis thorac. lumb. Signs of coxitis on the left side. A walnut-sized abscess was felt on the inner surface of the acetabulum. This was likewise corroborated by the operation.

He says that especially in cases 1 and 3 this symptom was more conclusive than any other in establishing the diagnosis of coxitis.—*Centbl. f. Chirg.* 1886. No. 11.

III. On Winding (Turning on the Axis, Torsion) in the Growth of Animals. By Dr. E. FISCHER (Strassburg). The spiral axillary twisting of the vertebræ in scoliosis leads F. to consider similar processes on the normal skeleton. He finds that most of the bones of the left side of the body are dextro-spiral (like a corkscrew), while those on the right side are sinistro-spiral. In support of this he cites most of the bones and many of the nerves, arteries and muscles of the extremities, parts of the vertebral, facial and cranial bones, and the crucial ligaments of the head. The reverse occurs in the ribs, and such structures as develop by an indentation, viz., ear, eye, neck, cysts, etc. In the horns and antlers of animals the direction of the spiral depends on the preponderance of the outer or the inner layer. Apparent exceptions are for the most part easily explicable.

Spiral twisting on the axis is shown by the muscular, nervous, vascular, genito-urinary and respiratory organs in animals, also by the skin (lines of tension, direction of hair, feathers and analogous structures). Provisional to a fuller elucidation of the question, he puts forth the thesis "That the growth of animals like that of plants proceeds according to the laws of spiral or screw motion, and that in beings made up of two symmetrical halves the right side has a sinistro-spiral twist, the left side a dextro-spiral twist. Azygous structures may present either modus.

The various body functions he also characterizes as spiral. The superficial grooves on bones and their interior structure follow the same order, wherefore it is often easy to tell the side of the body from which

splinters or bits of bone were taken. Club-foot originates from retarded torsion, knock-knee from over-torsion. In rachitis and osteomalacia, at whatever period of life originating, the spiral twisting is increased. He believes that the power causing the spiral torsion is inherent in the animal cell.—*Centbl. f. Chirg.* 1886. No. 13.

WM. BROWNING (Brooklyn.)

IV. Cutaneous Implantation as an Adjunct to Necrotomy.

By A. G. GERSTER, M. D. (New York). In a boy, æt. 10, with total necrosis of the shaft of the tibia an operation was performed by making a longitudinal incision and chiseling off the top of the involucrum to such an extent as to permit him to remove in one piece almost the entire shaft of the bone. At the same time it was found that there were several disseminated necrotic foci in the head of the tibia and the lower epiphysis, which were removed principally with the gouge. In the operation the posterior gutter-shaped involucrum broke into six or seven small fragments, and therefore the implantation of the edges of the skin incision could not be done as usual by nailing them to the bottom of the wound. He was, therefore, obliged to introduce four sutures through the edges of the incision, and then thrust the needle through the entire thickness of the leg and tie the loops on the posterior aspect of the limb. The groove formed by the inverted edges of the skin was very deep at that time, but the newly formed shaft of the tibia had now raised the cicatrix so that it was almost level with the normal outline of the limb. Although the new formation and the healing of the fractures went on without disturbance, it was noticed that in the upper and lower angles of the incision, where drainage-tubes had been placed, there was a continuous secretion; so that, five or six weeks after the operation, revision of the upper and lower ends of the bone was performed, and then it was ascertained that the cavities formed at the first operation, particularly at the head of the tibia, had not filled up with newly formed bone, but that the walls of the cavity had produced deciduous granulations, which from time to time had gone on to ulceration. Three or four revisions of the lower end of the bone were made, and finally resulted in occlusion of the cavity situated in the lower epiphysis. The upper epiphysis, however, remained rebellious

about five months and a half, and two weeks ago the speaker made a tongue-shaped flap, the base of which was below the patella, corresponding to the spine of the head of the tibia, and reflected that, together with the periosteum and the insertion of the patellar ligaments, exposing the capsule of the joint in order to be sure not to open it in chiseling off the top of the cavity. Then the roof and the other sclerosed walls of the cavity were chiseled away more or less, until finally bone was reached, which bled freely, and he then turned in the flap which he had formerly raised, and nailed it to the remnant of the posterior shell of the head of the tibia. An antiseptic dressing was applied, which was changed for the first time three days before the meeting, when it was found that the flap had attached itself nicely to the bottom of the wound. The lower portions of the wound, which could not receive a cutaneous covering, were healing by granulation, and it was fair to expect that a large part of them would be ultimately covered by skin.—*Proceedings N. Y. Surg. Soc.* 1886. March 8.

V. The Treatment of Fracture of the Patella by the Metallic Suture. By F. S. DENNIS, M. D., (New York). In opening, the writer calls attention to the fact that the operation originated in the United States, having been done in 1834 by Rhea Barton and in 1838 by McClellan. While bony union is possible without the suture, in proof of which he presented a specimen, he considers the treatment by metallic suture with antiseptic precautions, to be the ideal method for these cases for three reasons. (1) The absence of great danger to life and to limb as shown by a mortality of but four in 137 cases; many of these occurring in the infancy of the operation, the mortality, it is believed, will be much less than 3 per cent. in the future. Its value in cases of compound fracture, which formerly required amputation, is indisputable; (2) The superior result as regards the function of the limb and joint. The lack of close union of the fragments, loss of power and muscular atrophy of the limb, the tedious convalescence and the many other attendant inconveniences of other methods are in marked contrast with the rapid and perfect results obtained by the suture; (3) The greater rapidity of repair. Under the old methods three months were allowed for wearing a splint and nearly two years

more before the restoration of the functions of the limb and joint, while the suture permits walking in eight weeks after the most serious compound fracture and about a month in ordinary cases. The writer believes that in as short a time as two weeks the union will be sufficiently firm to permit use of the limb, although he does not advise it in less than three. The operation should be postponed for several days after the accident to avoid inflammatory action. He operates under mercuric bichloride antiseptics. He prefers the transverse incision, and would remove the drainage tube in three or four days without replacing it by any substitute. Finally he concludes, (1) in compound fractures of the patella, there is not the slightest question of the propriety of the operation; (2) in recent and old fractures, with full permission of the patient and under the strictest antiseptic precautions, the operation, in the light of present statistics is wholly justifiable; (3) in debilitated patients and in those suffering from any organic disease, the operation should not be employed, and is, in fact, contraindicated, as all other operations of expediency; (4) it is not an operation which can be indiscriminately performed, and never by an ordinary practitioner with little surgical experience and with little faith in germ theory of inflammation; (5) the success of this operation depends wholly upon conscientiously carrying out the smallest detail in antiseptic surgery, and should be attempted under no other circumstances; (6) while the number of cases does not yet justify a final settlement of the position of the procedure, future practice will soon enable us to condemn it as unsafe or recognize it as one of the greatest triumphs of our art. To the paper is appended an analytical table of 186 cases of operation.—*N. Y. Med. Jour.* 1886. April 3 and 10.

VI. Simple Dislocation of the Fibula. By J. H. PARKINSON, M.D., (Sacramento, Cal.). A man, æt. 24, while wrestling, fell with the right foot adducted and resting on its outer aspect, the knee being adducted and slightly flexed. On examination, a half hour later, the head of the fibula was found to have been dislocated backward, the tumor formed by the displaced bone being clearly defined. The external lateral ligament was intact, and could be felt, tensely stretched from bone to bone. The fibula was firmly fixed in the abnormal position by

that ligament, principally. After unsuccessful efforts by various methods, reduction was obtained under ether, by flexing the leg on the thigh until the heel touched the posterior surface, firm pressure being maintained on the head of the bone from behind forward, when it was felt to be moving inward.—*N. Y. Med. Rec.* 1886. April 17.

JAMES E. PILCHER (U. S. Army.)

GYNÆCOLOGICAL.

I. Carcinoma Corporis Uteri. By Dr. J. VEIT (Berlin). Author has observed eleven cases of this malady since 1879. The diagnosis was made by microscopical examination of particles of tissue scraped out of the uterine cavity, thus enabling him to study the disease in a relatively early stage. Simpson maintained that the pain, coming on periodically, at certain hours of the day, was one of the chief characteristics of carcinoma of the corpus uteri. Veit thinks this symptom is produced by the contractions of the greatly distended uterus in endeavoring to get rid of its contents. He did not observe it in any of these cases. A radical operation was possible in but 7 of the 11 cases. Hofmeier's statistics show that there were only 14 out of 28 cases in Schroeder's clinic where operative treatment was possible. Of these 14 cases, 2 were definitely cured, concerning 3 nothing further was ascertained, 3 had return of the malady and 6 died in consequence of the operation. Of the author's 7 cases, one died from the operation, 3 had a return of the disease (one in the first year and two in the second). There were but two permanently cured, one of which was operated by Schroeder, the other, a case of adenoma malignum, by the author. This rather unfavorable result the author thinks might be largely attributed to an early infection of the retroperitoneal glands, which state is not so easily recognized, as, for instance, is the infiltration of the broad ligament in carcinoma of the cervix. Early diagnosis of the disease is therefore very desirable and of much importance. A few notes from the statistics on this malady will be found interesting. Of 41 cases 21 were nullipara, and of 26 cases 5 were under 45, 3 under 49, and 18 over 49 years of age. In 3 of

Veit's cases laparotomy was performed, (one death), and in the 4 others the operation was carried out through the vagina. The author claims greater advantages and less danger for the latter method, and prefers it to the abdominal section. Catgut prepared in oil of juniperus was used for ligatures, etc.

In conclusion the author exhibited two specimens to the society, before whom this paper was read. (Berlin Obstetrical and Gynæcological Society).

The first, a uterus in the early stages of the disease, was removed from a woman 52 years of age, who had born three children. The patient was discharged fifteen days after the operation. The second uterus was from a woman 66 years of age, who had been confined twelve times. The operation was a difficult one on account of the contracted state of the vagina and the large size of the organ. The patient, however, made a good recovery.—*Deutsche Med. Wochenschrift*. No. 11. 1886.

C. J. COLLES (New York).

SYPHILIS.

I. Indurated Chancre of the Tongue, Phagedænic Chancre of the Throat, etc. By Prof. THIRY. A woman, æt. 68, presented herself at the clinic with a hard chancre on the dorsum of the tongue, which she attributed to infection by means of a spoon used in feeding a neighbor's child. She had noticed the sore six weeks. Already a papular syphilide had appeared, and the lymphatic glands were generally enlarged. Her daughter, who came at the same time, suffered from a large ulcer involving the left tonsil, the soft palate, uvula, and the back of the pharynx. A glandular abscess had formed secondary to this, it was opened and after a few days the edges of the wound took on a chancrous aspect. The girl was pregnant and ill-nourished, but presented no other morbid symptoms beyond dysphagia and a loss of appetite. She denied having any sexual intercourse for at least eight months, but was in the habit of frequently kissing her mother, and Thiry held that in this way she became infected. He cauterised the sore repeatedly and also used locally potassio-tartrate of iron. Whether secondaries followed or not is not stated.

Thiry believes that soft and hard chancres have no true lines of distinction, and that with regard to them "one should never prophesy before one knows."

He has repeatedly treated a woman for a soft, rapidly healing and non-infective venereal sore, whilst at the same time a man who had been infected by her was under his care for hard chancre, followed by general syphilis. (One obvious fallacy is that the woman may have previously had syphilis). He gives mercury in all stages of the disease, using iodide but little.—*La Presse Médicale Belge*, Dec. 27, 1885, and Jan. 10, 1886.

II. Syphilitic Gummata at the Margin of the Anus. By M. VERNEUIL (Paris). How rarely these occur is shown by the author's statement that after seeing a typical case in 1846 he met with no other until 1880. Since then he has observed three. The diagnosis is by no means easy; in one case Verneuil plunged a bistoury into the peri-anal swelling, and, although no pus came, performed the usual operation for fistula. It was only the prolonged induration of the wound that led him to institute specific treatment. Rapid healing ensued. In another case, however, several blind eternal fistulas existed, their openings being covered with rupial crusts; in a third there was a typical yellowish white slough.

The inguinal glands were enlarged in at least one of the five cases, but Verneuil attaches no importance to this as a help in diagnosis.—*Gaz. des Hôpit.* March 2, 1886.

III. Symmetrical Synovitis of the Knee in Hereditary Syphilis. By Mr. H. H. CLUTTON. In this interesting notice of a subject which is not very rare, but which has attracted little notice, the author brings out the prominent features of the affection—its painlessness, its almost exact symmetry, the apparent confinement of the process to the synovial membrane, and the age of the patients in whom it is met with (children and young adults, from 8 to 21). It presents, remarkable resemblance in many respects to interstitial keratitis; for instance it lasts from three to twelve months, is affected little, if at all, by local treatment, but considerably by the use of mercury and iodide of potassium, and it is interesting to note that of the

eleven cases reported ten had at the same time or previously the form of keratitis peculiar to inherited syphilis.

The reviewer has seen one or two cases in children under treatment for interstitial keratitis, and can confirm the accuracy in every respect of Mr. Clutton's description. Of the syphilitic origin there can be no question, indeed it may probably be regarded as peculiar to that disease, whilst it has probably nothing to do with syphilitic inflammation of the epiphyseal cartilage. Perfect recovery is the rule.—*Lancet*. Feb. 27, 1886.

J. HUTCHINSON, JR. (L

ON THE RADICAL CURE OF OBLIQUE INGUINAL
HERNIA BY INTERNAL ABDOMINAL PERI-
TONEAL PAD, AND THE RESTORA-
TION OF THE VALVED FORM
OF THE INGUINAL
CANAL.

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IN the many operations for radical cure of hernia, as at present performed, the sac is either retained in the canal (being dealt with in various ways), or a ligature is placed on its neck and the remainder of the sac is cut off. Wood's operation is the type of the former, while that which Mr. Banks has described may be taken as illustrative of the latter. The treatment of the sac in the operation about to be described, differs from these, inasmuch as, while the sac is preserved, it is completely returned beyond the limits of the canal and formed into a pad which is placed on the abdominal aspect of the circumference of the internal ring.

When the sac is left in the canal it acts as a plug. Plugs tend to widen instead of obliterating the canal and prevent the pillars from coming in direct apposition. Organic union is difficult to secure between portions of tissue which have not had their surfaces refreshed, such as the canal with its intervening sac. To overcome this the wires in Wood's operation are twisted firmly down so as to excite plastic effusion which it is hoped will suffice to mat the tissues together. This is undoubtedly secured in many instances, while in others it is not attained. Both when the sac is dealt with in this manner and when its neck is ligatured, there remains a funnel-shaped puck-

ering of the peritoneum, the apex of which presents in or at the internal ring. When the liquid movement of the intestine as it glides over the peritoneum is thrown into the form of a wave by the sudden impulse of straining or coughing, it is carried into this pouch which guides it into the canal where it expends its force. It thus acts as a wedge widening and tending to open up the canal.

With the view of obviating these defects, the sac in the operation about to be described, is carefully separated, not only from the entire inguinal canal, but also from the abdominal aspects of the circumference of the internal ring. It is completely reduced from the canal into the abdomen beyond the internal ring, then thrown into a series of folds, constituting a pad which is placed on the peritoneal surface opposite the internal ring. It there constitutes a boss or bulwark with its convexity presenting backwards toward the abdomen, while its base rests on the abdominal walls surrounding the circumference of the internal ring. This not only protects the internal ring, but sheds the intestinal wave backwards away from the opening.

Having thus secured the peritoneal surface, some surgeons would be inclined to leave the canal alone, thinking when the former is accomplished that the bulwark behind requires little strengthening. While agreeing in the primary importance of securing the peritoneal surface, it is considered advisable to bring into apposition and to unite parts which are abnormally wide, greater security and resisting power being thus imparted to the abdominal wall. This is especially the case, as the valve like formation of the canal is more or less obliterated in hernia, the internal ring being widened by the pushing inwards of the conjoint tendon, so that the external and the internal apertures are placed more directly opposite each other.

The canal having been refreshed by the finger and the handle of the scalpel during removal of the sac therefrom, its walls are brought into direct contact. This may be effected by any of the many methods of stitching. There are, however, in most of these methods, two objectionable points which ought to be obviated. First, the stitch through the conjoint tendon is single and includes the external oblique, therefore the apposition

of the internal with the outer pillar is not so extensive or so exact as it would be were a double suture placed in the conjoint tendon alone. Second, the conjoint tendon is approximated to the outer pillar of the external ring, the abdominal walls being thinned thereby and the natural valve which the canal forms is to a great extent obliterated. Instead, one ought to endeavor to bring the conjoint tendon into close proximity with the outer wall represented below by that portion of Poupart's ligament on a level with the lowest part of the internal opening, and above by Poupart's ligament, the transversalis and internal oblique muscles at a point corresponding to the highest level of the internal ring, the aim being to carry the conjoint tendon outwards toward the fixed unyielding ligament of Poupart and to unite it with the transversalis and internal oblique muscles. In oblique inguinal hernia, the transversalis muscle ought never to be included in the suture, as that would tend to defeat the desired object.

The principles of this operation may be equally applied to other forms of abdominal hernia, though in this paper its application to indirect inguinal hernia is alone described.

Preparation of the Parts Prior to Operation.—Before operating the hair of the pubes and neighboring parts is closely shaven, the skin is washed with soap and water, a nail brush being employed for this purpose. After drying, turpentine is smeared over the parts to remove any grease which may remain, a little methylated spirit clearing away the turpentine and leaving the skin in a good condition for operating. The parts are then covered with a portion of lint saturated with a bichloride solution until the patient is placed under the influence of an anæsthetic.

When the patient has been anæsthetized, the limb on the side of the hernia is flexed at the knee by a pillow which is placed under the latter. An assistant stands at the opposite side of the surgeon whose duty it is to retract the parts.

Hernia Needles.—The needles found to be most useful for the insertion of the stitch into the inguinal canal are figured here, one being used for passing the thread from right to left, the other from left to right. They are serviceable for many other purposes, such as for inserting sutures through broad

ovarian pedicles or through masses of omentum which are about to be removed. Wood's needle might, however be employed for all the sutures, except the double one introduced into the conjoint tendon.

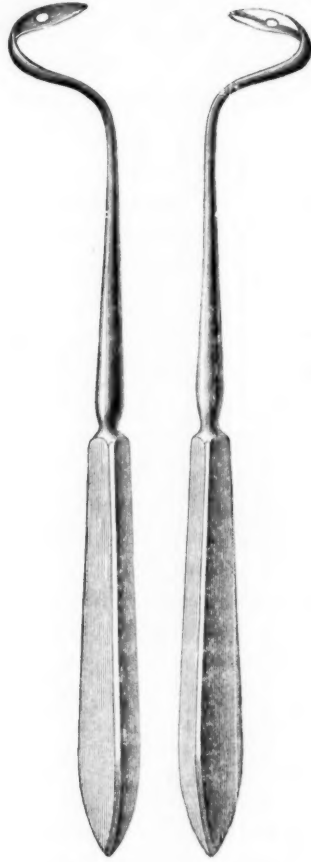


FIG. 1. NEEDLES, RIGHT AND LEFT, USED IN OPERATION FOR RADICAL CURE OF HERNIA.

The handle and blade are continuous being made from one piece of steel.

Operation for Radical Cure of Inguinal Hernia.—After having reduced the bowel make an incision sufficient to expose the external abdominal ring. An exploration of the sac

and its contents is then made and the finger introduced through the canal examines the abdominal aspects of the internal ring and the relative position of the epigastric artery. The operation may then be divided into two parts, the one relating to the establishment of a pad on the abdominal aspects of the internal ring, the other, to the closure of the inguinal canal. The steps of the operation are as follows:

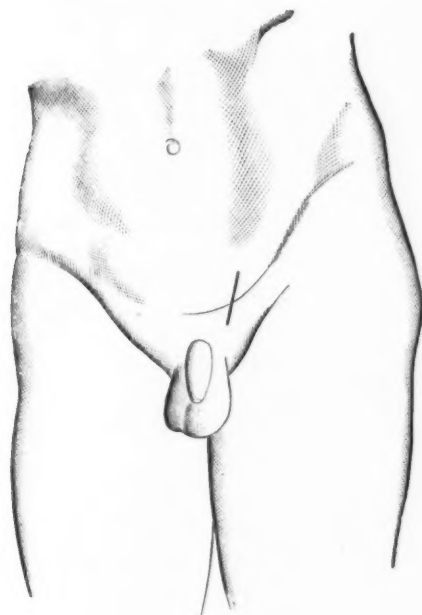


FIG. 2. SITE OF INCISION.

The dark line shows site of incision, exposing external opening of inguinal canal.

(A). The formation of a pad on the abdominal surface of the *circumference of the internal ring*.

(1). Free and elevate the distal extremity of the sac, preserving along with it any adipose tissue that may be adherent to it. When this is done, pull down the sac, and while maintaining tension upon it, introduce the index finger into the inguinal canal separating the sac from the cord and from the parietes of the canal.

(2). Insert the index finger outside the sac till it reaches the internal ring, there separate with its tip, the peritoneum for about half an inch round the whole abdominal aspects of the circumference of the ring. (Fig. 3).



FIG. 3. SEPARATING THE PERITONEUM.

Showing finger inserted through inguinal canal, separating the peritoneum from abdominal aspects of circumference of internal ring.

(3). A stitch is secured firmly to the distal extremity of the sac. The end of the thread is then passed in a proximal direction several times through the sac, so that when pulled upon the sac, becomes folded upon itself like a curtain. (Fig. 4). The free end of this stitch, threaded on a hernial needle, is made to traverse the canal and to penetrate the anterior abdominal wall about an inch above the internal ring, the wound in the skin being pulled upward so as to allow the point of the needle



FIG. 4. FOLDING THE SAC.

The sac transfixed and drawn into a series of folds.

to project through the abdominal muscles without penetrating the skin. (Fig. 5.) The thread is relieved from the extremity of



FIG. 5. SECURING THE FOLDED SAC ABOVE.

The hernia needle carrying the thread from the upper portion of the sac through the abdominal muscles from behind forward about an inch above the internal ring.

the needle, when the latter is withdrawn. The thread is pulled through the abdominal wall and when traction is made upon it, the sac wrinkling upon itself is thrown into a series of folds, its distal extremity being drawn furthest backwards and upwards. An assistant maintains traction upon the stitch until the introduction of the sutures into the inguinal canal, and when this is completed the end of the stitch is secured by introducing its free extremity several times through the superficial layers of the external oblique muscle; or it may be secured to a minute portion of decalcified drainage tube placed on the surface of the muscle. A pad of peritoneum is thus placed upon the abdominal side of the internal opening, where, owing to the abdominal aspect of the circumference of the internal ring having been refreshed, new adhesions may form. (Fig. 6).

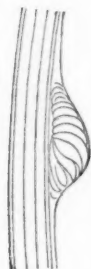


FIG. 6. PAD COVERING ABDOMINAL ASPECT OF INTERNAL RING.

The following modifications have been practised: After securing the stitch to the distal extremity of the sac, the thread has been passed directly through the abdominal muscles without first transfixing the sac. In children this may be sufficient. On one occasion, instead of placing the stitch extra-peritoneally it was introduced from within, the sac being completely invaginated so as to resemble an umbilicus, the prominence being directed backward into the abdomen. The case did well in every respect. This method has not been repeated as the extra peritoneal method answers equally well. After having reduced the sac into the abdominal cavity and securing it there, it has been fixed below by a stitch as well as above. This has been found to be unnecessary.

(B). *Closure of the Inguinal Canal.*—The sac having been returned into the abdomen and secured to the abdominal circumference of the ring this aperture is closed outside of it in the following manner: The finger is introduced into the canal and lies between the inner and lower borders of the internal ring. It makes out the position of the epigastric artery so as

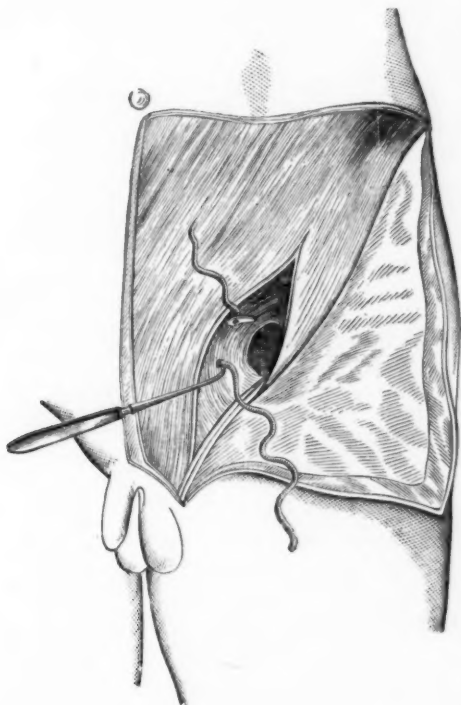


FIG. 7. THE THREADED HERNIA NEEDLE MAKING DOUBLE PENETRATION OF CONJOINT TENDON.

to avoid it. The threaded hernia needle is then introduced and guided by the index finger is made to penetrate the conjoint tendon in two places. First from without inwards near the lower border of the conjoint tendon; second, from within outwards as high as possible on the inner aspects of the canal. This double penetration of the conjoint tendon is accomplished by a single screw like turn of the instrument. (Fig. 7.) One

single thread is then withdrawn from the point of the needle by the index finger, and when this is accomplished, the needle along with the other extremity of the thread is removed. The inner side of the conjoint tendon is therefore penetrated twice by this thread and a loop left on its abdominal aspect (Fig. 8).

Second. The other hernia needle, threaded with that portion of the stitch which comes from the lower border of the con-

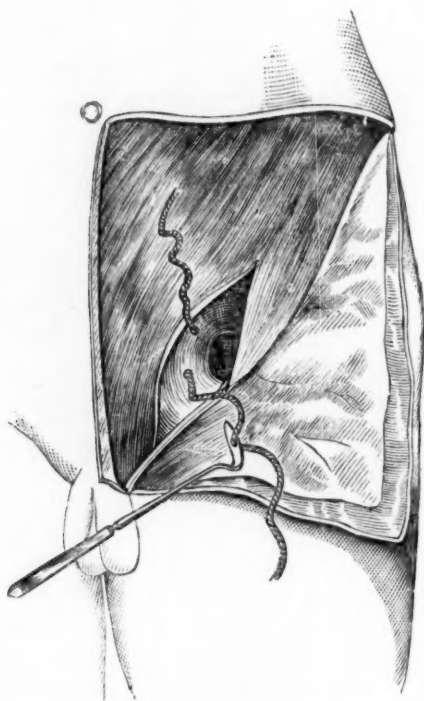


FIG. 8. LOOP ON ABDOMINAL ASPECT OF CONJOINT TENDON.

joint tendon, guided by the index finger in the inguinal canal, is introduced from within outwards through Poupart's ligament and the aponeurotic structures of the transversalis, internal and external oblique muscles. It penetrates these structures, at a point on a level with the lower stitch in the conjoint tendon (Fig. 9). The needle is then completely freed from the thread and withdrawn.

The needle is now threaded with the gut which protrudes from the upper border of the conjoint tendon and is introduced from within outwards through the transversalis, internal and external oblique muscles at a level corresponding with that of the upper stitch in the conjoint tendon. It is then quite freed

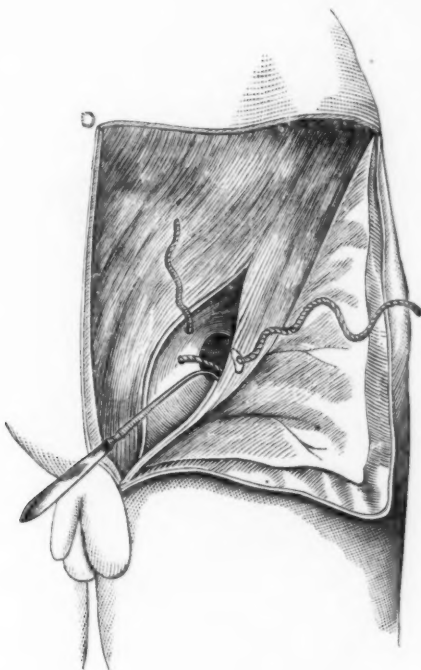


FIG. 9. THREAD FROM LOWER BORDER OF CONJOINT TENDON BEING CARRIED THROUGH OUTER PILLAR OF INTERNAL RING.

from the thread and withdrawn (Fig. 10). There are now two free ends of the suture on the outer surface of the external oblique and these are connected with the loop on the abdominal aspect of the conjoint tendon. To complete the suture the two free ends are drawn tightly together and tied in a reef knot.

This unites firmly the internal ring. The same stitch may be repeated lower down the canal if thought desirable. In adults it is well to do so. The pillars of the external ring are

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likewise brought together. In order to avoid compression of the cord, it ought to be examined before tightening each stitch. It ought to be freely movable. It is advisable to introduce all the necessary sutures before tightening any of them. When this is done, they may be all drawn tight and maintained so while the operator's finger is introduced into the canal to ascertain the result. If satisfactory, they are then tied, beginning

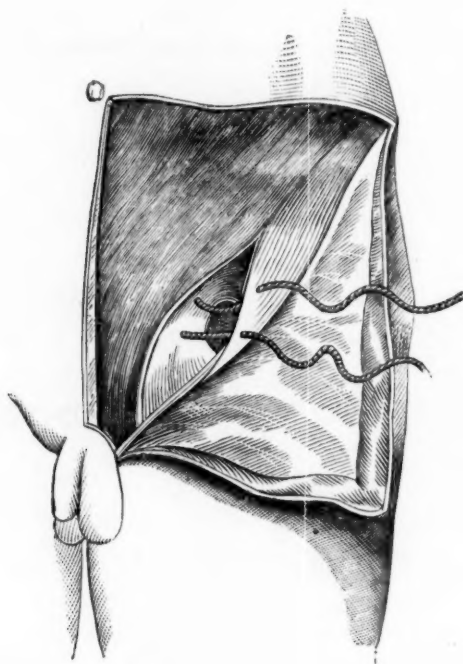


FIG. 10. THREAD READY FOR TYING.

In Figures 3, 5, 7, 8, 9 and 10 the skin and cellular tissue is reflected in a flap and the external oblique is opened up in such a way as to expose the interior of the canal and the internal ring.

with the one at the internal ring and taking up the others in order. During the operation, the skin is retracted from side to side, to bring the parts into view and to enable the stitches to be fixed subcutaneously. When the retraction is relieved the skin falls into its normal position, the wound being opposite

the external ring. The operation is therefore partly subcutaneous.

When the canal has been brought together, a decalcified chicken bone drainage tube is placed with its one extremity next the external ring, the other projecting just beyond the lower border of the external wound. A few chromic gut sutures are then introduced along the line of skin incision.

Dressing the Wound.—Iodoform is dusted over the wound, the interstices of the scrotum and its junction with the thigh. A small portion of sublimated gauze is applied and on top a sublimated wood-wool pad held in position by an aseptic bandage. As a rule a portion of elastic webbing is placed over the margins of the pad to secure it firmly.

As the patient is laid in bed, a pillow is placed under his knees while his shoulders are slightly raised, so as to relax the tissues about the canal.

After Treatment.—The rectal temperature is taken night and morning, and at the same time the dressings are inspected. The dressings are left undisturbed from fourteen to twenty-one days, unless they are previously stained or the temperature is abnormally high. On their removal at the end of that period the wound is found healed, the extremity of the decalcified drainage tube which projected beyond the margin of the skin is seen to lie loose on the dressings along with the external portion of the majority of the superficial stitches. A fresh pad is applied to maintain pressure over the part. From four to six weeks after the operation, the patient is allowed to rise from bed, but he is not permitted to work until the end of the eighth week. He is further advised not to lift heavy weights until the end of the third month at the very earliest. Adults engaged in laborious occupations are advised to wear a bandage and pad, as a precautionary measure. Those who are not so engaged are not required to wear a belt except when of very lax habit. All are recommended not to overstrain themselves. In the majority of children (six to fourteen years) the closure is so complete and firm that further treatment by pad or belt is quite unnecessary.

Operation for Radical Cure of Congenital Hernia.—In congenital hernia the sac is first isolated from its connection with

the canal. It is then opened and divided transversely into two parts, care being taken to preserve the cord. The lower part is formed into a tunica vaginalis. The upper is pulled down as far as possible, split behind longitudinally so as to allow the cord to escape, when it is closed by a stitch or two (Fig. 11). This portion is then dealt with quite as the sac of an acquired hernia, additional precautions being necessary to clear the cord at the internal abdominal ring. It is freed of its connections and placed as a pad on the abdominal aspect of the circumference of the internal ring.

On one occasion a separate tube was formed for the cord out of the sac but this has not been repeated.

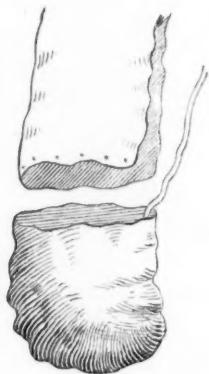


FIG. 11. MANNER OF TREATING THE SAC IN CONGENITAL INGUINAL HERNIA.

Materials for Suture.—Any of the materials usually employed as sutures may be used in this operation, provided the thread is sufficiently stout to prevent it rapidly ulcerating its way through the tissues. All are not equally serviceable, however. The substances hitherto used may be divided into three groups; first, those introduced with the object of being withdrawn after they have served their temporary purpose; second, those inserted with the view of permanently maintaining in apposition the parts which they have brought together, while they do not set up irritation in the tissues; and third, those that are intro-

duced to serve their purpose and which are afterwards absorbed. The first may be represented by the stout copper wire silvered used by Mr. Wood, of King's, which admirably answers the purpose to which he applies it. As it has to be removed after a definite period, the suture must be so placed that a portion of it presents externally. Though in the operation brought forward in this paper it is possible to arrange the sutures so as to permit of their ultimate withdrawal, yet in describing the manner of securing them it will be seen that this is purposely avoided, all of them being fixed subcutaneously. The second method is that of inserting a metallic suture, which, after being secured is cut off short, the tissues being closed over it. Some employ this method, merely to obviate the necessity of removing the wire, believing that it remains in the tissues and does not work its way out; while others consider that it not only has these advantages, but it also maintains by its presence the permanent apposition of the parts. That wire sutures when properly applied, without leaving any sharp points projecting from the circle into which they are formed, *may* remain indefinitely in the tissues without producing irritation or working their way out, is an established fact. This is especially the case where they are inserted into bone with their extremities turned in. It is not, however, a constant occurrence even in bone, less so in soft tissues, and much less still in tissues habitually subjected to movement. This is consistent with my own observation, and it is admitted by many of those who practice and most strongly advocate the leaving of the sutures of metal in situ. Granting that the wire suture remains permanently in the tissues without producing irritation, does the mere fact of it doing so serve any purpose? Some believe that its function is ended when it has brought the pillars of the ring closely together and has maintained them there for some fourteen or twenty-one days; after which it might as well be outside. Others, however, are of opinion that it maintains the pillars of the ring permanently in apposition. This is not the case. It serves a purpose in this respect while it exerts traction on the pillars. As long as it maintains tension on the tissues, the wire being itself unyielding, it causes ulceration of the parts pressed on. This ulcerative process will continue until the wire in relation

to the tissues has reached a position of rest. When this is accomplished it is no longer an active agent but descends to the condition of a foreign body which at best becomes encapsuled in the tissues but occasionally gives rise to disturbance which ends in its elimination. The third variety embraces substances which serve their purpose and which are afterwards absorbed. By far the most serviceable of such substances is cat-gut prepared so as to resist the action of the tissues from fourteen to twenty-one days. Gut of this description has been used for securing the pad of peritoneum and also for the closure of the canal. Gut prepared for a shorter period and which will only resist the action of the tissues for a week is used for the tissues in the superficial wound. The use of these stitches along with decalcified chicken bone drainage tubes obviates the necessity of subsequent interference with the wound. The latter admirably serve the purpose for which they were intended, securing drainage during the first six days and then becoming entirely absorbed.

Results.—There have been thirty-three cases in which the operation has been performed for radical cure of inguinal hernia, and fourteen have been subjected to it subsequently to the relief of strangulation; making in all forty-seven cases of inguinal hernia in which this method has been performed. In nine others, the principles of it were carried out in femoral hernia, after the relief of strangulation. In both of the latter classes of cases the operation was not performed where gangrene of the bowel was pronounced, or even where there was a distinct approach to this condition. In a number of femoral herniæ it could not be performed owing to the firm adhesions of the sac, especially when they were to the outer side next the femoral vein.

A tabulated view of these cases is here appended, from which it will be seen that there have been no deaths from the operation. In a few cases suppuration has ensued and that to a very slight extent, with the exception of a femoral hernia in which there was a prolonged dissection necessary. All the patients before leaving the ward were thoroughly inspected, and firm occlusion was obtained in each; so that the primary result was highly satisfactory. But it is just in cases of this kind

that the permanent result so often differs from the primary, and as the former is the true test of the efficiency of the operation, the patients have been kept under observation as long as possible. In judging of the permanent results two must be excluded from table No. 1, as having been so recently operated on. The remainder in table No. 1 have been kept under observation as follows: Four from four to six months after, four from eight to ten months, two for one year after, three for about one year and a half, five for two years, five for three years, one for four years and one for five years. So that eight have been kept under observation for less than a year, and seventeen from one to five years. Table No. 2 gives: one for eight months, three for one year after, three eighteen months after, four two years after, two three years after, and one four years after. Table No. 3 gives: One not seen after dismissal, two seen eight months after, two one year after, one eighteen months after, one two and a half years after, two three years after. In table No. 2 one has been kept under observation for less than a year, and thirteen from one to four years after. In table No. 3 two have been kept under observation for less than one year, and six from one to three years after; while one was not seen after dismissal from the wards. In all of them when last examined the rings remained firm. Out of the thirty-three cases in which this operation has been performed for radical cure one only has been found subsequently to wear a pad and bandage. In this instance patient said that he had been wearing a truss so long previously to the operation that he felt "a want" when there was no bandage over the part. It was more a force of habit than a need. The parts were firm. Among the fourteen who had been subjected to radical cure after the relief of strangulated inguinal hernia, three subsequently wore a pad and bandage as a precautionary measure. One of these was of very lax habit and was advised to continue the use of a support; one was a case of direct inguinal hernia with a very wide opening in the abdominal muscles; while the third did so as his occupation (engineer) often demanded considerable exertion. After the femoral hernias no truss has been worn.

TABLE NO. I.

CASES OF INGUINAL HERNIA SUBMITTED TO RADICAL CURE BY SPECIAL OPERATION.

No.	Date.	Name.	Age.	Occupation.	NATURE OF HERNIA.				Operation.	Highest Rect. Temp.	Suppuration.	No. of dressings.	Result.	Remarks.
					Duration.	Contents of Sac.	Direct or Indirect.	Congenital, Infantile, Acquired.						
1	Mar. '79.	J. C.	35	Hammerman.	(?) years.	Intestinal.	Indirect.	Acquired.	Rad. cure.	100.8° F.	None.	One.	Occlusion perfect.	Wound examined 21 days after and found firm. Seen three years after, firm occlusion. No truss.
2	Sept. '79.	A. S.	28	Millworker.	Several years.	Intestinal.	Indirect.	Acquired.	Rad. cure.	99° F.	None.	One.	Perfect. Firm occlusion.	Wound examined twenty-one days after and found firm. Patient kept under observation for five years, at end of which time parts were firmly united. No support worn.
3 4	July '80. July '80.	J. C. J. C.	5 5	Nil. "	3 years. "	Intestinal. "	Indirect. "	Acquired. "	Rad. cure. " L. side. " R. side.	99.8° F. "	None. Slight.	One. Three.	Firm occlusion. "	Wounds examined fourteen days after. Both firm. Patient kept under observation for three years. Rings found to be very firm. Wear no support.

{ 5 6 }	Dec. '80.	G. P.	44	Traveller.	6 years.	Intestinal.	Indirect.	Acquired.	Rad cure.	R.	100.8° F.	None.	One.	Firm occlusion.	Wounds examined fourteen days after and found healed. Seen eight months after, ring perfectly firm. Afterwards went abroad.
	Dec. '80.	G. P.	44	"	"	"	"	"	"	L.	101.4° F.	"	"	"	
{ 7 8 }	Feb. '81.	M. W.	15	Blacksmith.	5 years.	Intestinal.	Indirect.	Acquired.	Rad cure.	R.	100.6° F.	None.	Two.	Ring firm.	Ten days after operation wounds were both found healed. Three months afterwards both rings were found firmly occluded. Two years subsequently reported doing well. Ring's firm. No truss used.
	Feb. '81.	M. W.	14	"	"	"	"	"	"	L.	100.2° F.	"	"	"	
9	Mar. '81.	A. B.	5	Nil.	5 years.	Intestinal.	Indirect.	Con-genital.	Rad cure.	Sac split and divided As described in text.	100° F.	None.	One.	Ring firm.	Fourteen days after wound superficial. Slight line of granulation tissue which healed by 21st day. Seen 9 months after; Occlusion perfect. No belts.
	May '81.	R. H.	28	Med. student.	5 years.	Intestinal and slight omental.	Indirect.	Acquired.	Rad cure.		99.4° F.	None.	One.	Occlusion perfect.	At end of fourteen days dressing removed for first time. Wound firm. Extremity of decalcified chicken bone drainage tube and chromic gut sutures lying loose in dressing. Two years af.

CASES OF INGUINAL HERNIA SUBMITTED TO RADICAL CURE BY SPECIAL OPERATION. *Continued.*

No.	Date.	Name.	Age.	Occupation.	NATURE OF HERNIA.			Operation.	Highest Rect. Temp.	Suppuration.	No. of dressings.	Result.	Remarks.
					Duration.	Contents of Sac.	Direct or Indirect.	Congenital, In-fanile, Acquired.					
11	May '81.	W. D.	56	Porter.	10 years.	Intestinal and omental.	Indirect.	Acquired.	Rad. cure. L.	None.	One.	Perfect occlusion.	ter examined and ring found firm. No pad worn.
12	Nov. '82.	W. D.	57	"	11 years.	"	"	"	" R.	"	"	"	Seen four years after. Ring firm; no belt or pad worn. Seen two and a half years after. Both rings perfectly firm; went about his usual avocation without belt or support. After the first operation patient insisted that the other hernia should be operated on.
13	Mar. '82.	W. S.	15	Baker.	15 months.	Intestinal.	Indirect.	Acquired.	Rad. cure.	None.	Two.	Occlusion perfect.	Wound superficial at end of fourteenth day; firm at end of twenty-first day, when dressed for second time. Seen three years after; ring firm, no pad worn.

14	June '82.	M. W.	30	Sailor.	2 years.	Intestinal and omental.	Indirect.	Acquired.	Rad. cure.	99.8° F.	None.	One.	Occlusion perfect.	Wound firm at end of fourteenth day. Ring firm. Seen at end of eighth month after operation; parts firm. No truss. Not since seen.
15	Sept. '82.	L. McD.	45	Laborer.	3 years.	Intestine.	Indirect.	Acquired.	Rad. cure.	102.4° F.	Slight.	Four.	Occlusion firm.	Suppuration ensued here—consequently repeated dressings. Seen three years after; parts firm. No truss.
16	Mar. '83.	J. S.	20	School-master.	9 years.	Intestinal and omental.	Indirect.	Acquired.	Rad. cure.	101° F. on two nights.	None.	One.	Occlusion perfect.	Seen one year after. Parts quite firm. No pad or bandage.
17	May '83.	M. L.	25	Laborer.	3 months.	Intestine.	Indirect.	Acquired.	Rad. cure.	100° F.	None.	One.	Occlusion perfect.	At end of twenty-first day dressings removed and wound found firm. Decalcified chicken bone drainage tubes separated. Two years after patient in good health; regularly at work. Parts firm. No truss.
8	Nov. '83.	S. S.	10	School-boy.	8 years.	Intestine.	Indirect.	Con-genital.	Rad. cure. L. " R.	100.4° F.	None.	Two.	Occlusion perfect.	Wounds superficial at end of fourteen days; firm at end of twenty first. Three years after, Parts firm. No truss.

CASES OF INGUINAL HERNIA SUBMITTED TO RADICAL CURE BY SPECIAL OPERATION. *Continued.*

No.	Date.	Name.	Age.	Occupation.	NATURE OF HERNIA.				Operation.	Highest Rect. Temp.	Suppuration.	No. of dressings.	Result.	Remarks.
					Duration.	Contents of Sac.	Direct or Indirect.	Congenital, Infantile, Acquired.						
20	Jan. '84.	P. McA.	15	School-boy.	5 years.	Intestine.	Indirect.	Acquired.	Rad. cure.	102° F. once.	Few drops.	Two.	Occlusion perfect.	Two years after, parts firm. No truss.
21	May '84.	W. J.	30	Grocer.	3 years.	Intestine.	Indirect.	Acquired.	Rad. cure.	99° F.	None.	One.	Occlusion perfect.	When dressings removed at end of twenty-first day wound healed. De-calcified bone drainage tubes absorbed. Eighteen months after parts firm. No belt, but wears a pad and bandage.
22	June '84.	M. McF.	12	School-boy.	5 years.	Intestine.	Indirect.	Con-genital.	Rad. cure. R.	100° F.	None.	One.	Occlusion perfect.	Wounds seen at end of twenty-first day and found healed.
23	June '84.	"	"	"	"	"	"	"	" L.	"	"	"	"	One year after, parts firm. No truss.
24	Sept. '84.	M. F.	18	Clerk.	3 months.	Intestine.	Indirect.	Acquired.	Rad. cure.	100° F.	None.	One.	Occlusion perfect.	Twenty-one days after wound seen, and found healed. Fifteen months after, parts firm. No truss.

RADICAL CURE OF OBLIQUE INGUINAL HERNIA.

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25	June '85.	J. A.	25	Surgeon.	7 years.	Omental.	Indirect.	Acquired.	Rad. cure. Removal 11-4 lbs. omentum.	100° F.	None.	One.	Occlusion perfect.	Dressings removed at end of fourteen days. Wound firm ten months after, ring firm. No belt or pad.
26	Aug. '85.	C. G.	6	Nil.	2 years.	Intestinal.	Indirect.	Acquired.	Rad. cure. R.	100.4° F.	None.	One.	Perfect occlusion.	Dressings removed at end of fourteen days wound firm.
27	Oct. '85.	C. G.	"	"	"	"	Indirect.	"	Rad. cure. L.	100° F.	"	"	"	Dressings removed at end of fourteen days wound firm. Five months after patient seen; both rings firm. Linear scars. No belt worn.
28	Oct. '85.	J. McC.	25	Boiler-maker.	3 years.	Intestinal.	Indirect.	Acquired.	Rad. cure.		None.	One.	Occlusion perfect.	Ring firm at end of six months. Not since seen.
29	Oct. '85.	J. S.	23	Nil.	5 years.	Intestinal and omental.	Indirect.	Acquired.	Rad. cure.	98.8° F.	None.	One.	Occlusion perfect.	Twenty-one days after wound firm—healed. Eighteen months after parts firm. No truss.
30	Oct. '85.	J. W.	9	School-boy.	7 years.	Intestinal.	Indirect.	Infantile.	Rad. cure.	100° F.	None.	One.	Occlusion perfect.	Examined wound at end of twenty-one days. Decalcified chicken bone drainage tube disappeared. Wound firm. Superficial stitches separated. Six months after parts firm. No truss.

CASES OF INGUINAL HERNIA SUBMITTED TO RADICAL CURE BY SPECIAL OPERATION. *Continued.*

No.	Date.	Name.	Age.	Occupation.	NATURE OF HERNIA.				Operation.	Highest Rect. Temp.	Suppuration.	No. of dressings.	Result.	Remarks.
					Duration.	Contents of Sac.	Direct or Indirect.	Congenital, Infantile, or Acquired.						
31	Jan. '86.	W. P.	22	Sailor.	9 months.	Intestinal.	Indirect.	Acquired.	Rad. cure.	101° F. on one occasion.	None.	One.	Occlusion perfect.	Twenty-one days after wound found firmly united. Decalcified chicken bone drainage tube absorbed, all but minute portions which projected from wound, which were found separated and lying in dressing. Superficial stitches also separated. Linear scar. For months after parts firm. No truss.
32	Feb. '86.	J. C.	13	School-boy.	12 years.	Intestinal.	Indirect.	Congenital.	Rad. Cure for Congenital hernia.	100° F.	None.	One.	Occlusion perfect.	Twenty-one days after wound found firm. Decalcified chicken bone drainage tube absorbed. Linear scar.
33	Mar. '86.	C. C.	5	Nil.	3 years.	Intestinal.	Indirect.	Congenital.	Rad. cure.	102.4 F.	Slight.	Three.	Perfect occlusion.	Urine saturated dressings, temperature increased and slight suppuration in consequence dressings more frequent.

TABLE NO. 2.

CASES OF STRANGULATED INGUINAL HERNIA IN WHICH RADICAL CURE (SPECIAL OPERATION) WAS PERFORMED SUBSEQUENT TO RELIEF OF STRANGULATION.

NATURE OF HERNIA.				OPERATION.		COURSE AFTER OPERATION.			Result.			
Name and Age.	Occupation.	Duration		Contents of Sac.	Direct or indirect.	Congenital, infantile, acquired.	For strangulation.	For Rad. Cure.		Highest Rect. Temp.	Suppuration.	No. of dressings.
		Of hernia.	Of strangulation.									
1 Mar. '80.	J. McL. 20 yrs.	Laborer.	7 years. 24 hours.	Omental and intestinal.	Indirect.	Acquired.	Removal of 3 in. x 2 in. of gangrenous contents of intestine. Relief of stricture. Reduction of hernia.	Rad. cure by special operation.	101° F. 2d night.	None.	Two.	Occlusion perfect. Seen two years after, found firm occlusion. No belt worn.
2 Aug. '80.	J. B. 19 yrs.	Laborer.	2 years. 96 hours.	Intestinal.	Indirect.	Acquired.	Relief of stricture. Reduction of hernia.	Rad. cure.	99° F.	None.	One.	Occlusion firm—at end of eighth month still solid. No truss; not since seen.
3 Dec. '80.	J. G. 53 yrs.	Coachman.	8 years. 12 hours.	Intestinal.	Direct.	Acquired.	Relief of stricture; reduction of hernia.	Rad. cure by placing pad on abdominal aspect of ring, and bringing muscles together firmly (Aperture very wide.	100 F.	None.	Four.	This man rose from bed on fourteenth day, lifted a heavy basket of clothes and had return of hernia. It was again operated on, and he left

CASES OF STRANGULATED INGUINAL HERNIA IN WHICH RADICAL CURE (SPECIAL OPERATION) WAS PERFORMED SUBSEQUENT TO RELIEF OF STRANGULATION.—Continued.

NATURE OF HERNIA.			OPERATION.		COURSE AFTER OPERATION.			Result.				
No.	Date.	Name and Age.	Duration. Of her- nia.	Contents of sac.	Direct or indirect.	Congenital, infantile, acquired.	For strangulation.		For Rad. Cure.	Highest Rect. Temp.	Suppura- tion.	No. of dressings.
8	July '83.	P. B. 23 yrs.	5 years. 51 hours.	Intes- tinal.	Indirect.	Acquired.	Relief of doublestric- ture, one fi- brous band round inter- stine, reduc- tion of her- nia.	Rad. cure.	99.4° F.	None.	Two.	Occlusion firm Two years after found at work. No truss.
9	Dec. '84	B. T. 17 yrs.	(9) years. 37 hours.	Intes- tinal.	Indirect.	Infantile.	Relief of stric- ture, reduc- tion of her- nia.	Rad. Cure af- ter division of sac into two, one forming tu- nica vagin- alis, the oth- er abdomi- nal pad.	101° F.	Slight.	Three.	This patient had pneumonia at time of admis- sion into ward, and prior to op- eration. Recov- ery; occlusion perfect. One year after quite well Firm walls; no truss.
10	Dec. '84.	C. K. 28 yrs.	7 years. 36 hours.	Intes- tinal.	Indirect.	Acquired.	Relief of doublestric- ture, one at ring, the other by fi- brous band at neck of sac. Reduc- tion of her- nia.	Rad. cure.	99.2° F.	None.	Two.	Occlusion perfect. Firm walls. Seen eighteen months after. Regularly at work, occlu- sion firm; wears bandage.

11	Mar. '84.	J. J. 4 mos.	Nil.	2 days.	24 hours.	Intes- tinal.	Indirect.	Infantile.	Relief of stric- ture, reduc- tion of her- nia. Valved incision in skin to pre- vent urine passing into wound.	Rad. cure.	99° F.	None.	One.	Taxis failed, child in agony—un- der chloroform taxis again fail- ed. Two years after child in good health— firm ring. No truss.
12	May '84.	J. McA. 30 years.	Laborer.	4 years.	12 hours.	Intes- tinal.	Indirect.	Acquired	Stricture re- lieved by means of dressing for- ceps and probe point- ed bistoury. Reduction of hernia	Rad. cure.	100.4° F.	None.	One.	Firm occlusion. One year after found ring firm. Regularly at work. No truss.
13	June '84.	D. D. 50 yrs.	Carter.	7 years.	72 hours.	Intes- tinal.	Indirect.	Acquired	Stricture re- lieved. Re- duction of hernia.	Rad. cure.	100.4° F.	None.	One.	Firm occlusion. 18 months after ring firm. No truss. Regularly at work.
14	Feb. '85.	J. McC. 9 months.	Nil.	3 days.	72 hours.	Intes- tinal.	Indirect.	Acquired	Valved incision on skin to prevent urine pass- ing into wound. Re- lief of stric- ture. Reduc- tion of her- nia.	Rad. cure.	98.6° F.	None.	One.	Taxis failed under chloroform. Seen one year after. Ring quite firm. No truss.

TABLE NO. 3.

CASES OF STRANGULATED FEMORAL HERNIA IN WHICH RADICAL CURE (SPECIAL OPERATION) WAS PERFORMED SUBSEQUENT TO RELIEF OF STRANGULATION.

NATURE OF HERNIA.			OPERATION.			COURSE AFTER OPERATION.			Result.			
Name and Age.	Occupation.	Duration. Of hernia.	Contents of sac.	For strangulation.	For Rad. Cure.	Highest rect. temp.	Suppuration.	No. of dressings.				
1	July '78.	Mrs. S. 34.	Housewife.	(?) years.	36 hours.	Intestine and omentum.	Removal of a couple of inches of omentum. Relief of stricture, reduction of bowel.	Sac formed into pad and placed abdominal aspect. Falciform process united to Gimbernat's ligament.	99.8° F.	None.	One.	Ring firm. At end of eighth month parts firmly occluded. No truss.
2	Feb. '81.	Mrs. T. 50.	Housewife.			Intestine and omentum.	Relieved stricture. Reduction of hernia.	Sac formed into pad and placed abdominal aspect. Falciform process united to Gimbernat's ligament.	100° F.	Slight.	Two.	Ring firm. Seen one year afterwards, parts firm; no truss or pad.
3	May '81.	Mrs. M. 23.	Housewife.	7 years.	50 hours.	Intestine and omentum.	Removed 5 1/4 in. of omentum. Relieved stricture and reduced hernia.	Sac formed into pad and placed abdominal aspect. Falciform process united to Gimbernat's ligament.	99.8° F.	None.	One.	Occlusion perfect. Seen and examined three years after; parts firm—no truss.
4	July '81.	Mrs. L. 56.	Housewife.	6 years.	28 hours.	Intestine and omentum.	Omentum removed. Relief of stricture, reduction of bowel.	Sac formed into pad and placed abdominal aspect.	98.4° F.	None.	One.	Ring firm; not seen after dismissed.

5 July '83.	Mrs. G. 50.	House- wife.	3 years.	15 hours.	Intestine and omentum.	Intestine enclosed in omentum; had to be carefully liberated. Remov- al of omentum re- lieved stricture, re- duction of bowel.	Falciform process united to Gimber- nat's ligament.	100.1° F. One night.	Few drops.	Two.	Ring firm. Seen three years after; parts firm. No pus.
July '83.	Mrs. D. 40.	House- wife.	20 years.	48 hours.	Intestine and omentum.	Dissected bowel out of mass of omen- tum which enclos- ed it. Relief of stric- ture, reduction of bowel, removal of omentum.	Sac formed into pad and placed al- most in dorsal aspect. Falciform process united to Gimber- nat's ligament.	98.8° F.	None.	One.	Ring firm. Two and one half years after parts found firm. No truss.
Jan. '84.	Mrs. McL. 55.	House- wife.	8 years.	97 hours.	Intestine and omentum.	Removal of gan- grous omentum. Relief of stricture. Returned bowel.	Sac formed into pad and placed al- most in dorsal aspect. Falciform process united to Gimber- nat's ligament.	102° F. Once.	None.	One.	Ring firm. Seen eighteen months afterwards; parts firmly occluded. No truss.
8 Jan. '85.	Mrs. C. 52.	House- wife.	12 years.	48 hours.	Omentum and intestine.	Dissected bowel out of mass of omen- tum which enclos- ed it like a cyst. Relief of stricture. Re- turned bowel.	Sac formed into pad and placed al- most in dorsal aspect. Falciform process united to Gimber- nat's ligament.	98.4° F.	None.	One.	Ring firm. A year after- wards parts remaining perfectly firm. No truss.

CASES OF STRANGULATED FEMORAL HERNIA IN WHICH RADICAL CURE (SPECIAL OPERATION) WAS PERFORMED SUBSEQUENT TO RELIEF OF STRANGULATION.

No.	Date.	Name and Age.	Occupation.	NATURE OF HERNIA.		OPERATION.		COURSE AFTER OPERATION.			Result.	
				Duration. Of hernia.	Contents of Sac.	For strangulation.	For Rad. Cure.	Highest Rect. Temp.	Suppuration.	No. of dressings.		
9	July '85.	Mrs. N. 53.	Housewife.	12 years.	72 hours.	Intestine and omentum.	Bowel adherent to sac and separated from sac with great difficulty. Portion of omentum which was gangrenous was removed.	Sac formed into pad and placed abdominal aspect. Falciform process united to Gimbernat's ligament.	103° F.	Suppuration.	Four.	Suppuration at first two dressings considerable—little at end of third, 21 days after. At end of 4th week wound firm. Seen nine months after. Parts firm. No truss.

THE OPERATION FOR VARICOCELE,

By ALEX. OGSTON, C. M.,

OF ABERDEEN,

REGIUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF ABERDEEN.

Nowhere has the introduction of the antiseptic method into surgery exercised a more marked influence than in the encouragement it has given to the performance of such operations of convenience as that for Varicocele. Formerly looked upon with disfavor, if not actually considered unjustifiable, this operation has since the antiseptic days been again taken up by surgeons everywhere, and modified or improved in accordance with antiseptic principles. Where this has happened, it is now part of the daily routine of practice, and is recommended with as much confidence, and performed with the same security, as tenotomies and subcutaneous operations. Improved varicocele operations are continually appearing in our surgical literature, and various plans are being advanced as claiming both safety and success.

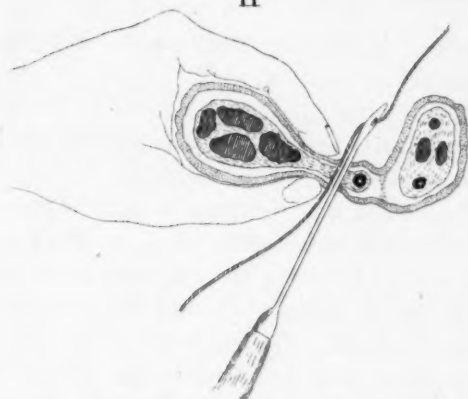
That the operative treatment is sound and justifiable surgery can scarcely be denied, for advanced cases of the disease are so frequently found to produce distress and disablement to a great degree, that a reasonably safe and certain cure is welcome both to the sufferer and the surgeon. Palliative methods of treatment, such as Wormald's ring, trusses, suspensory bandages, are seldom of any use.

The method of operation I have employed during the last eight years excels in simplicity, safety and certainty the various proceedings that I have seen recommended by operators. It is indeed so simple that I have no doubt many others besides myself have had recourse to it, although I have not observed in medical periodicals any statement of its having been adopted or recommended.

It consists in an aseptic subcutaneous deligation of the vein by means of a needle and disinfected thread.

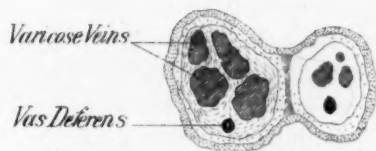
OGSTON ON VARICOCELE

II



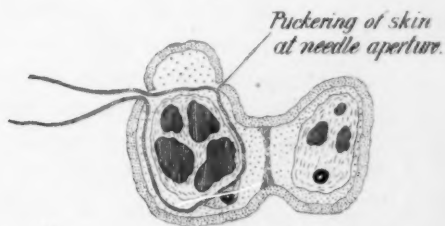
Thread passed through between Vas and Veins.

I



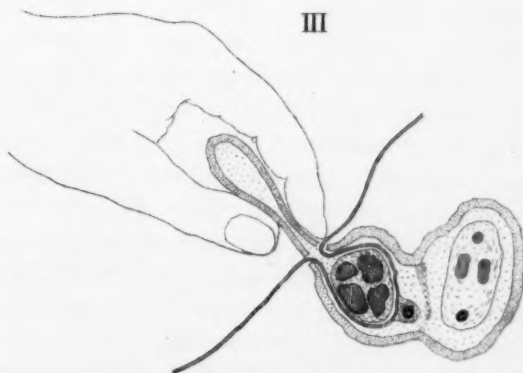
Horizontal section of Scrotum in Varicocele.

IV

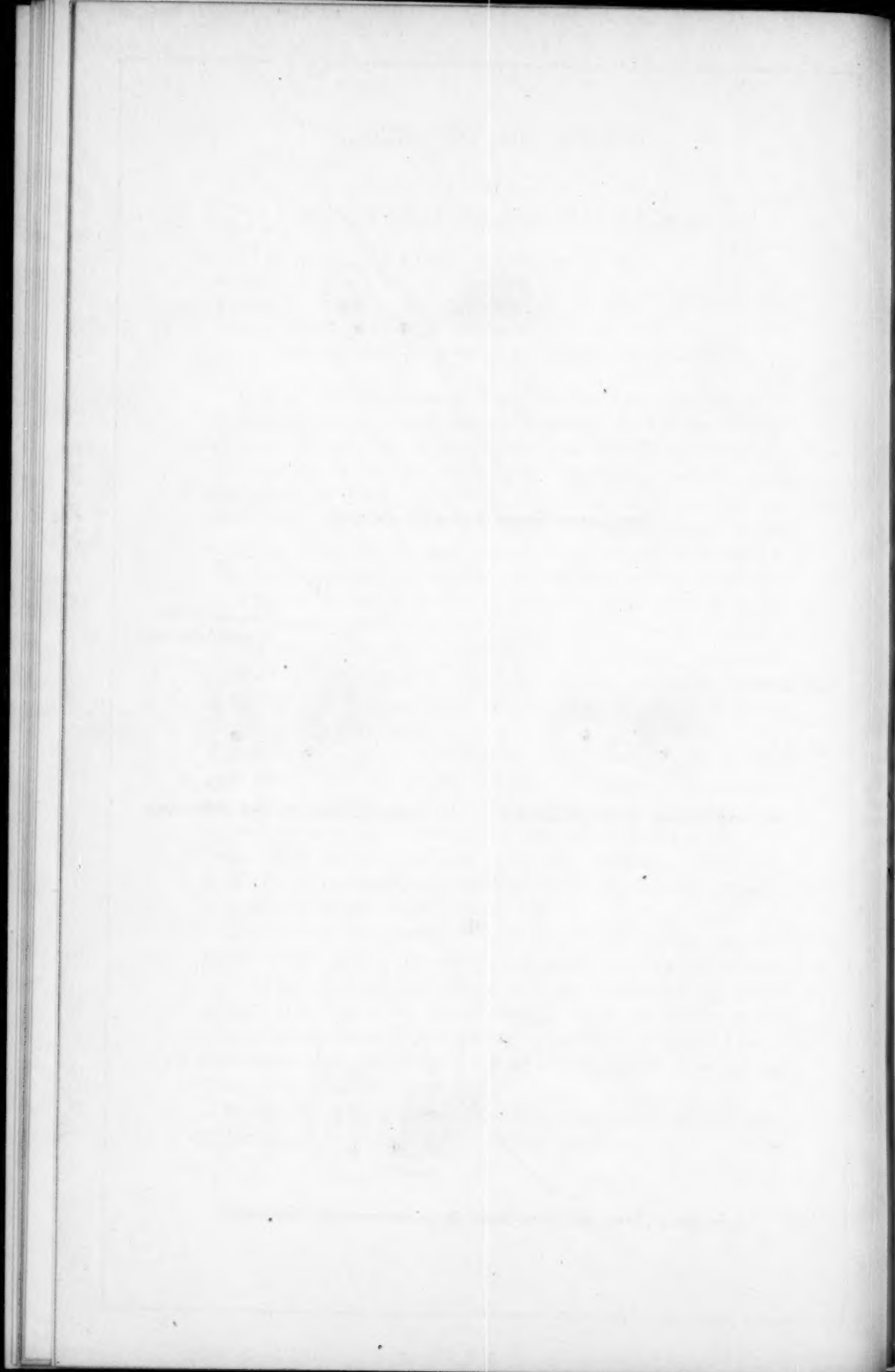


Position of Thread and Veins before tying.

III



Position of Thread and Veins before the second insertion of the needle.



I have preserved notes of six patients so operated on, the earliest in January, 1878. They were all young men, the subjects of advanced varicocele on the left side, and there existed softening of the testicle in two of them. In all the operation was confined to the left side, and was done in the same manner save that in one of them anæsthesia was not employed. They suffered from no fever or constitutional disturbance after the operation, the local reaction was confined to the formation of a firm induration at the site of operation, which in the course of a few months slowly disappeared. The result was in every instance satisfactory at the time, and most of them I have seen or heard from long after the operation, and they have found the cure complete and permanent.

The operation was carried out as follows: The patient was, in all cases save one, put under the influence of chloroform or ether in bed, and the scrotum disinfected by a 5 per cent. solution of carbolic acid. The patient, who was not anæsthetized, was operated while sitting on a chair. After disinfection the left half of the scrotum was, by the usual manœuvre, siezed three-quarters of an inch above the testicle, between the forefinger and thumb of the left hand and its contents allowed to slip back and escape until the cord-like vas deferens had slipped out of grasp. At this point the finger and thumb squeezed the skin of the two sides of the scrotum together, to squeeze the veins away from the just escaped vas, and a threaded needle was thrust through the scrotum at this spot (Fig. II). A handled needle with a large eye at its point was employed, and its thread was the strongest surgeons' silk, disinfected either by having been boiled in 5 per cent. carbolic solution, or by Kocher's method of twenty-four hours soaking in German oil of juniper, the thread being afterwards kept in absolute alcohol. The needle was disinfected by being washed, first with oil of turpentine, and then with carbolic lotion. Care was had, in thrusting the needle through the scrotum, to avoid, at the points both of entrance and emergence of the needle, the tubular sebaceous scrotal glands from which the hairs emerge, as they are always full of bacteria and their disinfection is an impossibility. The needle was then unthreaded and withdrawn leaving the thread in its track. The skin of the front of the

scrotum was then seized by the left forefinger and thumb and drawn forwards in a fold between them until the punctures from which the thread emerged were drawn forward over the dilated veins to the base of the folds (Fig. III). They were there squeezed together and steadied by the finger and thumb, and the needle, this time without any thread, was once more passed through the scrotum, entering and emerging by the same points as before. The end of the thread emerging beside the needle point was threaded into its eye and the needle was withdrawn, carrying the thread with it, so that both ends of the thread emerged by the same point where the needle was first entered (Fig. IV). The needle having been detached the long ends of the thread were tied by a surgical knot and tightened upon the veins and tissues they embraced with the utmost strength that could be applied. A triple knot was made, the ends of the silk were cut off short and the knot permitted to sink into the depth of the scrotum. The puckerings inward of the needle apertures, due to the first and second needle tracks not quite coinciding in the subcutaneous tissues, (see Fig. IV.) were freed by pulling the skin outwards at these spots until the included fibres gave way and allowed the skin to fall into its natural position entirely unconnected with the knot.

Another exactly similar operation was made an inch (or two finger breadths, as the case required) higher up the veins, and the operation was then complete.

The scrotum was again disinfected, surrounded by a sheet of salicylic wool, and the patient laid in bed with the testes elevated.

One of my patients submitted to the operation without anæsthesia, but as a rule, it is sufficiently painful to demand the administration of an anæsthetic, and the careful carrying out of the disinfection and necessary steps are much facilitated thereby.

A knot of the size of the point of the thumb appears between and around the ligatured points, and a slight degree of scrotal œdema can be detected, lasting for a few days. The patient suffers little pain, and as the needle punctures are agglutinated at once frequent dressing is needless.

A daily renewal of the salicylic wool during the first three days is desirable, after that no further dressing is required. The knot at the site of the operation slowly disappears, and at the end of three weeks the patient can safely walk about, using, however, a suspensory bandage, and being careful to avoid strain, pressure, or fatigue of the part.

The disappearance of the last traces of the knot demands a month or two for its accomplishment, but eventually no trace remains of the operation having been performed.

THE TREATMENT OF FRACTURES OF THE LOWER END OF THE RADIUS.¹

By RICHARD JOHN HALL, M. D.,

OF NEW YORK,

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AT the outdoor department of the Roosevelt Hospital, a not inconsiderable number of fractures of the lower end of the radius present themselves, which have already been seen by physicians in private practice, and after the reduction of the deformity and the application of an apparatus, have been referred to us for treatment, because the patients are impecunious; or which have received the first care at some other hospital or dispensary, and are sent to us because the patients reside in the neighborhood. In this way, and through conversation with various surgeons and physicians in the city, I have had opportunity to note the different modes of treatment adopted by a great number of surgeons, and in a number of the hospitals in the city.

In the claim of a particular apparatus, and the treatment of the fracture, two ideas seem to me to have special weight with

¹ Read before the New York Surgical society March 23, 1886.

New York surgeons. First, that by leaving the wrist and hand free, and allowing it to fall into a position of adduction, we at once reduce the displacement of the hand toward the radial side, and prevent the partial ankylosis of the wrist and the rigidity of the tendons and small joints of the hand, so much dreaded in this fracture; and, second, that to avoid this latter condition it is necessary and advisable to commence passive motion at an early period, long before the consolidation of the fracture, and to continue this during the healing process.

A conviction, founded on both theoretical considerations and on a considerable practical experience, that both these views are incorrect, is my only excuse for bringing so well worn a subject to the notice of the Society.

It will, probably, be a relief to the minds of my hearers to know that I have no new apparatus to present, no new mode of treatment to propose, and that I do not claim to cure all cases without deformity or ankylosis.

My only object is to express my conviction that certain precautions usually considered necessary, are not generally so; and that in the case where the dangers feared are real, the precautions taken are, at best, useless, and often injurious.

In clinging to the conviction that adduction of the hand, maintained either by its own weight, as in the methods of Cline and Brasnby Cooper, or by the pistol-shaped splint of Goyrand or Nélaton, our surgeons are scarcely to be excused, since the fact that this treatment is founded on a false view of the nature of the displacement, and is useless to overcome it, has been fully demonstrated by three, at least, of the authorities most frequently consulted, Malgaigne (*Traite des Fractures*, etc., t. i. p. 616), Hamilton (*A Practical Treatise on Fractures and Dislocations*, p. 300), and Stimson (*A Treatise on Fractures*, p. 460).

For the practice of leaving the wrist and hand free, to allow of active and passive motion, or of removing the apparatus at short intervals during the consolidation, for the same purpose, much more weighty authority can be cited. Indeed, almost all the authorities insist upon the importance of one or the other of these measures. As instances may be cited Malgaigne (op. cit., t. p. 617), who allowed the splints to descend

only as far as the first row of carpal bones, in order to be able to make moderate movements. V. Pitha (*Handb. der allg. und spec. chir.*, Billroth and Pitha, Bd. 4, Abt. 2, S. 102) advises the same. Hamilton (op. cit., p. 309) seems to advocate complete rest, as a rule, but states that when a fracture extends into the joint, early passive motions must be made to prevent ankylosis. Erichsen (*Science and Art of Surgery*, vol. 1. p. 575) says: "After the first week it is well, especially in elderly people, to leave the fingers free, and to encourage movement of them, lest that painful stiffness result which is so common a result of the accident. Passive motion of the wrist-joint may, however, often be commenced with great advantage to the patient before the union of the fracture, more particularly when it is impacted," and predicts very troublesome stiffness if the hand and fingers be kept fixed during the whole time. Packard (Ashurst's *Internat. Encyclopædia of Surg.*, vol. iv. p. 177) advises that passive motion should be made only in exceptional cases "where there is a strong tendency to stiffening, such as sometimes occurs in old people, or where the violence producing the injury has been very great." Stimson (op. cit., p. 184) recognizes the principle that immobilization is indicated, as a rule, in injuries involved close to joints; but adds, "in the smaller joints of the hand the case is different. There the extended position and immobility favor stiffening, even when the fracture involves only the forearm or arm; and, therefore, should be left free, or dressed in the fixed position and moved every day." And again (p. 146), "the indications are of two kinds: to immobilize the fragments, and to allow passive and voluntary motions of the fingers in order to prevent or diminish their subsequent stiffness."

Schede (Zur Behand. des typischen Bruches der unteren Radiusepiphyse; *Verhand. der Deutschen Gesell. für Chir.*, 1882, p. 68) recommends that the fingers should be left free and the patients encouraged to make active and passive motions with them, and that the splints should be removed every eight days to allow of passive motion, removing them finally in three weeks. The discussion which followed turned rather on the relative merits of various splints, especially as compared with plaster of Paris, rather than on the question of

early motion ; but Schüller, Längenbeck, and Billroth stated that they always used plaster as a permanent dressing, leaving the fingers free, and without ever seeing stiffness as a result. Billroth stated that the cases in which there was a tendency to ankylosis and much stiffness were those due to great violence, the fracture penetrating the joint, or with great effusion of blood and inflammatory products.

It will be observed that some of the authorities quoted above advocate early motion only in the more severe cases, If, however, the principle which I advocate is correct, that motion of an injured joint and of the parts surrounding it will only increase the inflammatory process, give us a greater quantity of provisional callus, and cause more effusion into the ligaments and sheaths of tendons, with consequent greater subsequent rigidity, it follows that the worse the case the more harm will be done by disturbing the parts, and the stronger indication we have for more perfect and prolonged immobilization. Some, as Stimson, advocate fixation of the wrist, but leave the fingers free, and consider active and passive motion of these of great importance.

Like almost all surgeons, I leave the fingers free also, but merely because this allows them to fall into a natural and easy position of flexion, and the hand being enclosed in splints and carried in a sling, the patient is under no temptation to attempt much motion.

That fixation in the constrained and unnatural position of complete extension should cause rigidity and discomfort, I can well understand, and have often had opportunity to verify by observation ; but if immobilization be advisable in cases of injury to larger joints, or in their neighborhood, I know of no reason why it should be injurious in the case of the smaller.

As a matter of fact, I have frequently, in the treatment of fractures of the metacarpal bones with sinking in of the knuckles, kept all the fingers flexed over the end of the padded splint, and completely immobilized for a month continuously, and have never noticed the slightest stiffening as a result.

Verneuil (*Bull. et Mem. de la Société de Chir. de Paris*, t. 5, p. 487) combats with great ability the idea that ankylosis of an inflamed or injured joint is promoted by immobilization; shows

that prolonged fixation of a healthy joint has never been known to lead to such a result ; that the ankylosis is due to the inflammation of the joint and of the surrounding parts, and that the first requisite for preventing or subduing inflammation here as elsewhere is complete rest of the part.

In giving the mode of treatment adopted by us in these fractures, I would not be understood to advocate the particular kind of splint applied as better than any others in which the same principles of treatment are recognized—they have been used merely because they are cheap, and readily and rapidly applied. Neither have we found one mode of treatment applicable to all cases ; where there has been a great tendency to recurrence of the displacement, special means have occasionally been necessary to prevent this. The cases of which I have histories represent really only a small proportion of those at the Roosevelt Hospital during this time ; they are, however, by no means selected cases. If there has been any selection it has been of the more severe cases which demanded my personal attention.

In a large number of cases no history was taken, because deformity, crepitus and mobility were absent, almost the only sign of fracture being the great tenderness on pressure. Were these cases included, it would be open to any one to question a diagnosis made on such grounds. These cases, however, have always been a perfect result as regards freedom from ankylosis and stiffness.

A certain number of other cases have not been recorded, owing to the pressure of work and to the confusion incident to moving from crowded quarters to a new building.

Of seventy-one cases in which histories have been kept, eight are useless, because no statement is made of the condition of the parts at the time of discharge sufficiently definite to be of value. Twenty-eight disappeared before the splints were finally removed. This leaves forty-one cases in which the exact result has been carefully noted.

The principles of treatment have been the following : Complete reduction of all deformity when patient is first seen. In only one case was it necessary to give ether to accomplish this.

Application of antero-posterior splints extending from the elbow to the metacarpo-phalangeal articulation.

Inspection of the parts at intervals of two or three days during the early part of the treatment, and later at intervals of a week.

In two or three cases only the simple antero-posterior splints have not sufficed to retain the parts in position, when we have applied either Roser's apparatus, a long dorsal splint, with a wedged-shaped pad, keeping the wrist flexed, or strong iron strips, bent so as to give flexion with slight adduction.

The splints have been kept in place for from four to five weeks, no passive motion being made.

When the splints have been removed, the arm has been examined by all the surgeons present, usually at least three or four, often more, and the result noted as perfect only when all were agreed.

The patient has usually been instructed to carry the arm in a sling for a week longer, and not to attempt any laborious work for at least three weeks more. Of these forty-one cases the result as regards absence of any deformity, and either perfectly normal movements of the wrist and fingers, or so little stiffness that the functions were practically normal, has been recorded as perfect in thirty-one.

A similar result as regards motion, but with slight deformity, has been noted in five more cases. In one of these the patient had not presented himself from the time the splints were applied until the day on which they were removed.

In another case it is noted that active motion at the wrist is slight, but passive motion perfect, and very slight deformity. In another case, in which the injury was due to great violence, the impaction of the radius was so firm, and the displacement of the ulna so marked that etherization was necessary, and even then the deformity was reduced with great difficulty, and not quite perfectly. When the splints were removed, dorsal flexion was fair, palmar only to a slight extent, due, it is noted, to the severity of the original injury and the flexed condition in which it was necessary to keep the wrist to prevent a return of the displacement. Finally, we have three cases in which slight or well-marked silver-fork deformity resulted with, in

two, marked displacement of the hands toward the radial side.

In one of these, a man of 72, an active eczema was developed under the splints immediately after their application, so severe that the patient would tolerate no apparatus whatever. No rigidity of the wrist or fingers occurred.

The other two patients were discharged after the usual treatment, the result being noted as very good. Being again under observation some months later, slight silver-fork deformity was noted with well-marked displacement of the hand toward the radial side. In one of these there was reason to believe that the deformity was due to disregard of our instructions, as to undertaking hard work immediately after the removal of the splints. I had a similar experience some years ago when, after discharging an elderly woman at the end of four weeks with a very good result, in defiance of my instructions she at once commenced hard work at a scrubbing board, and presented herself some three months later with one of the worst deformities that I have ever seen. I would call attention to this as being one of the ways in which blame may be unjustly attached to the surgeon.

In the third case, besides deformity, there was decided weakness of the flexor muscles of the hand, apparently due to an effusion into the sheaths of the tendons. I am at a loss to account for the late appearance of the deformity, as the patient really seemed to have done no work since his discharge. He was receiving a weekly allowance from a society, and the continued weakness may have been due to long-continued voluntary disuse of the muscles.

I am far from maintaining that good results may not be attained in particular cases by the methods which I condemn, but holding, as I do, that the principle of early passive motion for injuries near to or involving joints is wrong, I must regard them as having been attained in spite of, and not in consequence of, the treatment.

As incidental points of interest in these cases, I may mention that in three the fracture was distinctly stated to have been produced by forced palmar flexion. In two of these the deformity had been partially reduced before the patients were seen, so that I am unable to give the direction of the original

displacement. The third, a very intelligent man who gave a clear and positive account of how the accident occurred, presented the silver fork deformity of a typical Colles. One case presenting the regular deformity was alleged to be due to direct violence, a heavy board having fallen on the wrist.

Another, a man, presented himself with an unimpacted fracture of the lower end of the radius and no deformity. On touching the parts a violent spasm of the extensors of the thumb and of the radial extensors of the wrist threw the parts into a perfect silver-fork position, the spasm causing severe pain and lasting several seconds. This could be made to recur a number of times and be carefully observed.

One case presented an oblique fracture running from above and internally downward and outward into the joint, so as to chip off a triangular fragment from the internal portion of the lower end of the radius; the fragment, of course, did not include the styloid process.

DISCUSSION.

Dr. H. B. SADNS said he did not suppose that the members of the Society would come to any agreement on the chief point raised by Dr. Hall because their experience doubtless had differed, whereas the results had generally been good. His own attention was called to the point of the avoidance of passive motion by reading Verneuil's very able discussion of the subject in 1879. He confessed that he had often been disappointed in attempting to secure the results said to have been obtained by passive motion. His practice had been very much like that advocated by Dr. Hall, and he was prepared to endorse the views that had been advanced. He believed that mistakes were frequently made by resorting to passive motion early in all cases of fracture in the neighborhood of joints. In the case of one joint he thought all surgeons would agree that passive motion should not be resorted to, and that is fracture in the neighborhood of the hip-joint. The usual plan of treatment was to adjust a posterior splint and allow the limb to remain in a fixed position for at least six weeks; at the end of that time Dr. Sands thought there was not, as a rule, any stiffness to be observed at the coxo-femoral articulation. He had been frequently disappointed in attempting by means of passive motion to restore or preserve the mobility of the wrist-joint. He believed that in some cases immobility is inevitable. He had treated the fracture

under consideration in both ways; that is, by complete immobilization, and by resorting to early passive motion, and by each method had occasionally been disappointed in the results when the accident occurred in old persons. But when the comparison came to be made between the results obtained by the two methods, he had no hesitation in saying that passive motion had been resorted to much too often and much too early. He had frequently noticed in fracture in the neighborhood of the elbow-joint occurring in children, that the joint, after the fracture had united, was very stiff and the tissues about it more or less thickened, and the conditions such that all efforts on the part of the surgeon to restore complete mobility by passive motion were futile; but he had seen some of these patients at a subsequent period, and had been both surprised and pleased at the result, for the inflammatory products had disappeared, and the arm, being left to perform its natural movements, had become quite supple. At the same time he did not wish to go so far as always to condemn an early resort to passive motion, for he had seen cases in which it had been the means of bringing about mobility where otherwise such motion would have been lost. But, as a general rule, it would be better to let nature have her own way rather than attempt to force it by early resort to passive motion, and so far as his experience went he was prepared to endorse the rule advised by Dr. Hall.

DR. YALE said that, from his own experience, prolonged rest of a joint is not productive of the ankylosis often attributed to it. Not only with diseases of joints, but with fractures in the neighborhood, it had been his habit to keep them in a fixed position rather a long time than otherwise, and he had not been troubled subsequently with ankylosis. Furthermore, he had seen some cases in which immobilization had not been the cause of ankylosis when it did occur. He recalled one case in particular, that of an elderly lady who fell down some steps and broke her humerus. The splint which was applied fixed the elbow and shoulder-joints, but the hand was intentionally left free so that it should not become ankylosed. In the results the elbow and shoulder-joints were free very much earlier than were the joints of the hand, which were never fixed in a splint nor suffered any injury. He was obliged to work for several weeks with passive motion before succeeding in limbering up the joints of the hand.

Dr. L. S. PILCHER said that he was fully in accord with the idea of immobilization of joints, as a rule, either when they are themselves the seat of an injury, or when the parts in the immediate neighborhood have been injured; for it had seemed to him that in attempts at early mobiliza-

tion there is danger of increasing or prolonging irritation by the movements of the fragments, movements caused by the contraction of those muscles which are inserted into the immediate neighborhood of the affected parts, these contractions being both voluntary and involuntary, provoked by passive motion. The main reason why passive motion should not be used would be found in these results, and not in anything produced in the joint itself.

But in this injury at the wrist-joint there is an entirely different condition of affairs; in fracture at the lower end of the radius we do not by passive movements set in motion muscles which are attached in the immediate neighborhood of the affected part. The only muscle which could be brought into motion is the pronator quadratus—all the other muscles terminate in tendons which pass beyond the affected parts, with the exception of the supinator longus, which in the ordinary movements of flexion of the joint is not brought into use at all. The great masses of the extensors and the flexors are not so related to the injury as either voluntarily or involuntarily to produce movements of the parts which may increase irritation, while the movements of the articular surfaces upon themselves produced by passive motion are innocuous.

It seemed to him that in these injuries the greatest difficulty with which we had to contend, and the evil results of which we wished to avoid, was the tendency to effusion and subsequent adhesion along the sheaths of the tendons, and that in the movements properly guarded which may be produced at a very early date the formation of these adhesions may be prevented, adhesions which, if not prevented, will produce after-stiffness of the parts for a considerable period, and sometimes render the joints useless. His own practice during the last twelve years had been based upon this theory, and during this time he had thrown aside entirely splints of all kinds. After the fragments have been properly replaced he simply encircles the part by a band of adhesive plaster an inch and a half wide, which pretty firmly binds them together. This he reinforces by a roller bandage applied to the hand and forearm, which gives a sense of greater security, and diminishes the tendency to fluxion present in the earlier days of the injury. In this way the hand and the fingers are left to the natural movements. By this method he had treated patients of all ages, and the result had been uniformly satisfactory, certainly much more satisfactory as regards functional result than the results usually expected to be attained by surgeons. As an illustration of the method, he presented a patient, a woman *æt.* 45, who a little more than two weeks previously had fallen

upon the pavement and sustained in the usual way fracture of the lower extremity of the radius, at the same time tearing off the styloid process of the ulna also.

He further remarked that in only two cases had he applied any other dressing after the receipt of this injury, and in both instances it was done simply to satisfy the fears of either the patient or the friends. In one case a circular starch bandage was used which completely immobilized the wrist, and in the other Levis's metallic splint was used.

Of course, he appreciated the fact that very great differences exists in the character of the injuries which we are in the habit of placing under the general head of fracture of the lower extremity of the radius, and that in cases of severe comminution of the lower fragments particularly it might be desirable to immobilize the wrist-joint. But in the ordinary cases, where the lower fragment is simply torn off, with more or less displacement, without such a degree of injury of the parts about the wrist-joint as to produce a very serious complication of the case, it seemed to him that in the simple retentive bandage there is given a sufficient apparatus for the successful management of these cases, and after an experience of these years, which has been reinforced by the experience of many others who had used the same method, he was ready to believe that it is sufficiently efficient, and that it will give just as good results as the use of splints. In the application of the bandage he would say that it is always a matter of first importance accurately to reduce the fragments, and after that a simple circular bandage in the great majority of cases will be found sufficient to carry it to a satisfactory conclusion.

Dr. C. K. BRIDDON said that for more than eight years he had a service in the New York Dispensary, where there were treated between four and five hundred fractures of the lower end of the radius, nearly all of which came under his supervision. In the early part of that period they were treated by immobilization by the ordinary pistol splint, and no passive motion was used until at the end of four or five weeks, and in a large percentage of these cases fair results were obtained, stiffness remaining only for a short period of time. In other cases, treated by the use of the dorsal in addition to the palmar splint, the results were unsatisfactory as regards subsequent mobility of the joint.

His impression had always been that the stiffness which follows this injury does not depend so much upon the character of the treatment, or immobilization, or passive motion, as upon the nature of the injury itself. In the simple fractures very good motion is usually obtained, although in some cases there is stiffness of the fingers.

He certainly reached one conclusion during his term of service, and that was, no matter whether the case was treated with plaster-of-Paris splint or with a short pistol splint, or otherwise, a great deal of mischief was done by the dorsal splint. In all the latter part of his service in the dispensary he never used the dorsal splint, but especially the pads, which were commonly placed upon it, and also upon the plantar splint, in the neighborhood of the fracture. He had found that they produced inflammation of the sheaths of the tendons, and that an undue degree of stiffness remained. For a number of years he had not used any posterior splint at all, but had simply employed a curtailed anterior splint, padding the radial aspect of the splint to fill up the concavity of the forearm, and leaving the ulnar portion of the splint free, and he had obtained fair results.

He thought that a good deal of the deformity and of the stiffness which remained in these cases was due to the fact that the fracture was not reduced. It is sometimes exceedingly difficult to make complete reduction, and that difficulty does not occur in bad fractures, but in cases in which the lesion is moderate, involving the bone simply, and not tearing away the fibrous structures of the joint, which continue upward in the periosteum for a distance above the usual site of fracture. In the cases in which considerable damage is done the mobility of the parts is such that they are easily restored. If, therefore, great care is taken to reduce the fracture completely, the fragments will be retained in position with the simple treatment devised by Dr. Pilcher; but where there is considerable damage done to the parts about the joint he believed that to depend upon a simple retentive bandage would be liable to be followed by a good deal of mischief and bad results; at least that had been his personal experience, as he had treated some cases, not many, with the simple retentive apparatus, and the swelling and inflammation had gone on increasing, and he thought that the swelling and inflammation were consequent upon the mobility permitted by the simple retentive dressing. He could not conceive that, where there was much mobility of the parts, this simple retentive bandage would answer. He did not wish by any means to condemn the method advocated by Dr. Pilcher, but simply to state that such was the result in the few cases in which he had attempted to treat the fracture in that way,

Dr. J. C. HUTCHISON said that for a number of years he had treated fractures of the lower end of the radius in the manner shown on the patient introduced by Dr. Pilcher, which, it was only fair to say, was brought to the attention of the profession by Dr. Moore, of Rochester,

in a paper read before the Medical Society of the State of New York many years ago, in which he expressed the opinion that there was with this fracture dislocation of the ulna in more than half of the cases. Dr. Moore cited five cases which he thought established his view. They were all severe cases, and probably there was dislocation of the ulna. His method consists in applying a compress over the lower end of the ulna, which is retained in position by surrounding it with adhesive plasters, as seen in Dr. Pilcher's case. Since then Dr. Hutchison had adopted this method almost invariably, and with most satisfactory results. There has been much less stiffness of the fingers, less ankylosis, and less pain than in the use of former methods, and the treatment was much less troublesome to the surgeon than any which he had employed. He agreed entirely with the statement made with reference to the satisfactory results obtained by this method of treatment. Of course, perfect results were not to be expected in every case by any method of treatment.

Dr. PILCHER said that in previous discussions of this subject he had credited Dr. Moore with his suggestion concerning the pathology and treatment of these fractures, and it might not be out of place to state again that the turning of his attention to the possibility of doing away with the splint was due to Dr. Moore's original paper on the subject, published in the *Transactions of the Medical Society of the State of New York for 1870*. Soon after reading it a case of an aggravated character came under his observation in which a great deal of displacement presented itself. There were all the evidences of the condition described by Dr. Moore as present in dislocation of the extensor carpi ulnaris, and his method of manipulation as applied by Dr. Pilcher was successful in restoring the parts to their natural condition. Dr. Moore's bandage, as he supposed, was then applied. The case progressed to an excellent termination. When the patient was about to be discharged from treatment, Dr. Pilcher found that instead of placing his pad under the ulna, as strongly urged by Dr. Moore, he had placed it underneath the radius. The good result notwithstanding, led him to believe that the entire value of the apparatus was in the retentive bandage, and not in the particular mode of dressing or in the compress, and from that time he had thrown aside the compress and had used the retentive bandage, with the results already stated.

Dr. SANDS said he thought it would be inexcusable to make the statement that the results were uniformly good in the treatment of this fracture. He was sure he had seen bad results in old people, which were inevitable, and in a certain proportion of cases in which the fracture is

severe and the patients old, more or less stiffness will be the result. He did not believe, as Dr. Briddon had already stated, that the treatment alone was responsible for such failures. He could hardly believe that any method would produce uniformly good results, and he doubted whether such a statement should receive the endorsement of the Society.

Dr. PILCHER said he hoped that nothing which he himself had said would lead to the suggestion which Dr. Sands had expressed, for he had simply stated that in the cases presented to him, and treated in this way, the results had been good. He perhaps had been fortunate in not having had presented to him any cases with the conditions which Dr. Sands had referred to, and he would dislike very much being understood as saying that there were no cases which would not result unsatisfactorily no matter what method was employed. What he had desired to emphasize was simply that in the ordinary fracture of the lower extremity of the radius the simple retentive bandage is as effective as any other method of treatment.

Dr. SANDS said that was the exact point; he was unable to see how the Society could safely endorse the statement that the results are uniformly good by any method of treatment, and he was prepared to protest against it.

Dr. GERSTER said that in his service during the last seven years at the German Dispensary, the number of fractures of the lower end of the radius was quite considerable, and he had, during the last five years, in a large majority of these cases, employed the simple dressing proposed by Dr. Pilcher. He had employed it where he believed it would be sufficient, and, as a rule, it had been found to be efficient in these cases. The results were certainly just as good as those obtained by any other method of treatment, but especially better than those obtained where splints had been employed which included the metacarpophalangeal joints. The majority of cases of fracture of the lower end of the radius were such, in which, so far as replacement of fragments was concerned, no difficulty was experienced, and good results were gained. If, however, long splints, including the hand, were employed, as was seen in a number of cases admitted for after-treatment, a pseudo-ankylosis of the tendons and of the small joints of the fingers was produced by the prolonged inactivity, a more serious condition than the fracture itself, especially in old people. In the cases treated by Pilcher's method the patients could almost at once resume their avocations, from the time when the bones had united. He believed the movements of the fingers, after treatment by other methods, were not as

free as they are seen to be preserved under this simple retentive bandage.

He stated, on the other hand, that it is a treatment to be applied only in those cases where the replacement and retention of the fragments are easy. There are cases, fortunately not very numerous, where this retentive bandage does not suffice. It may be said that these difficult cases will give poor results under any form of treatment, but a large number of cases are such as admit of easy replacement and retention of the fragments, and in these cases Dr. Pilcher's retentive bandage had proved very satisfactory indeed.

Dr. STIMSON said, with reference to rigidity of the fingers following immobilization, that he heard with surprise the statement made by Dr. Hall, that immobilization of the fingers does not end in rigidity. He was under the impression that it is a fact of common observation. He thought, also, that it is a matter of general observation that rigidity of the fingers occurred, as in the case mentioned by Dr. Yale, when the limb was immobilized in the treatment of injuries even above the elbow. He had a case now under observation in which almost complete rigidity of the fingers followed their immobilization for two weeks in the treatment of a simple uninflamed incision of the skin of the palm.

He agreed fully with Dr. Hall concerning the absolute value of immobilization of the wrist. As to the objection raised by Dr. Hall, that passive movements of the fingers are liable to increase the inflammation within the sheaths, Dr. Stimson thought the danger a remote one, because, in the first place, the range of motion in the fingers is so slight; and, secondly, the tendons are so well protected from sharing in the primary injury, in front by the pronator quadratus, behind by the usually untorn periosteum.

The result in Dr. Hall's cases, which showed that in thirty-one cases no deformity was left, was by far better than the average, and he thought that if Dr. Gerster had heard Dr. Hall's results he would not have made the statement that the retentive bandage had given results superior to any other.

Again, the point raised by Dr. Sands that some cases do not afford good results, he thought an important one. In the patient presented by Dr. Pilcher, it seemed to him that the deformity had not been completely reduced, and that the fingers were not free now. In these cases of fracture of the lower end of the radius in which the distal fragment is split into several pieces, the chances are that recovery will take place with a limitation of motion. Furthermore, there are cases

in which the intermediate spongy portion of the bone is so crushed that he thought the lower fragments could not be safely brought down without risk of failure of union; such cases are best treated without making an attempt to overcome the shortening of the radius. The resulting deformity is not great, and is not accompanied by diminution of function.

Dr. HALL said he expressly stated that immobilization in the extended position would be followed by stiffness, accompanied by discomfort to the patient. Hence, all the cases had been treated in the manner described. After effusion has taken place and fibrin been deposited, its place is taken by organized and vascularized tissue, so that in making motion blood vessels are ruptured, which gives rise to a fresh exudation that only increases the rigidity of the tendons. He should regard Dr. Pilcher's case as one in which there was marked displacement of the hand toward the radial side, with considerable limitation of motion. He had seen several fractures treated in this manner, and one in which Dr. Moore was said to have applied his own apparatus, and had not been pleased with the results as a rule. Dr. Hall failed to see how a simple band of adhesive plaster about the wrist could hold the fragments in position, when there was a tendency to recurrence of the displacement, on any mechanical theory whatever.

Dr. GERSTER said he did not wish to be understood as saying that the results obtained by him in the use of Dr. Pilcher's retentive bandage were better than any others; simply that they were fully as good as those obtained by any other treatment.

Again, he took exception to the explanation given by Dr. Hall concerning the effect produced by passive motion on the sheaths of the tendons in which exudation has taken place, as he did not believe that passive movement of a smooth tendon would increase the exudation or produce any additional amount of inflammation, nor did he believe from *a priori* reasoning that such a result was very probable.

EDITORIAL ARTICLES.

ON LATERAL PHARYNGOTOMY FOR THE EXTIRPATION OF MALIGNANT TUMORS OF THE TONSILLAR REGION.

When Cheever, of Boston, reported his first case of operation for removal of a malignant tumor of the tonsillar region in 1869, he was able to find but scant reference in literature to the subject. His case, indeed, seems to have been the first in which an attempt was made to methodically and radically extirpate such a tumor from without by lateral pharyngotomy. In his first operation, Cheever did not divide the jaw bone, nor perform a preliminary tracheotomy, but by making an incision from a point just within the angle of the jaw downwards for $3\frac{1}{2}$ inches parallel to the sterno-cleido mastoid muscle, followed by a second incision, $1\frac{1}{2}$ inches in length, along the lower border of the jaw, meeting the first incision, he gained sufficient room, so that, after having divided the digastric, stylo-hyoid and stylo-glossus muscles, and having picked apart the fibres of the superior constrictor of the pharynx, he was able to enucleate the affected tonsil without injury to the pillars of the fauces. The tumor thus removed is described as the size of a hen's egg. That this operation was not sufficiently radical is evidenced, however, by the fact that speedy recurrence of the disease took place, infiltrating the soft palate.

In a second case reported by the same surgeon, operated in 1878, the jaw was sawn through, and a preliminary tracheotomy was done, and the growth easily enucleated, but with no better result as regards the future of the patient, for at the end of two months recurrence at the site of the original disease had already taken place.

Meanwhile additional contributions to the literature of the subject had been made, in particular a valuable memoir by Poland in the *Brit. and For. Med. Chir. Rev.*, April, 1872, and by Passaquay (Paris, 1873). Since the publication of Cheever's second case (*Boston Med. and Surg. Jour.*, August 1, 1878), the noteworthy contributions upon the

subject which have been made to literature are chiefly a statistical paper by Delavan, of New York, on the subject of Primary Epitheliom of the Tonsil (N. Y. Med. Jour., April, 1882), an exhaustive memoir, involving statistical, pathological and operative features, by Castéx, in the *Révue de Chirurgie*, 1886, and a clinical report by Mikulicz, of Cracow, in the *Deutsche Med. Wochenschrift*, Nos. 10 and 11, 1886.

The memoir of Castex is deserving of a full review, which will be given in a subsequent number of this journal. The remainder of the present article will be devoted to the contribution of Mikulicz.

The operative steps of M. are as follows:

Incision in the cutis from the mastoid process obliquely downwards to the great cornu of the hyoid bone. The soft parts are divided carefully, partially, also, the tissues of the parotid gland, and the edge of the ramus of the inferior maxillary bone exposed posteriorly, care being taken to avoid injuring the facial nerve.

The periosteum is then removed with the raspatorium from the external and internal surface of the ramus, upwards as far as possible and downwards as far as the insertions of the masseter and internal pterygoid muscles. The ramus is divided subperiosteally $1\frac{1}{2}$ to 1 cm. above the angle, and enucleated. Traction is now made on the jaw downwards and outwards, and the masseter, internal pterygoid, also the digastric and stylohyoid, drawn to one side. The tonsillar region will be found to form the base of the wound thus made. By dividing the lateral wall of the pharynx, direct entrance is obtained to the palatal arches, base of tongue and to the posterior pharyngeal wall upwards into the naso-pharyngeal space. If the digastric muscle be furthermore divided, the entrance to the larynx will be exposed. Before beginning this operation, it will be advisable to perform tracheotomy. The author claims for this operation a great advantage over that of Langenbeck, inasmuch as by his method a tumor involving the lateral pharynx wall may be exposed from outwards, and the whole operation carried out *extra cavum oris et pharyngis*. The author's method also permits of an antiseptic treatment. (Tamponade with iodoform-gauze).

Mikulicz gives the history of four cases, operated by himself in this manner.

Case I. Tonsillar carcinoma involving the posterior pharynx wall, the base of the tongue and the soft palate.

Patient, female, æt. 65, had difficulty in swallowing for one and a half years. A diagnosis of carcinoma of the left tonsil was made six months previous to the operation. Pharyngotomy. The inferior maxillary bone was not divided above the angle, but $1\frac{1}{2}$ ctm. in front of this; consequently the insertions of the masseter and internal pterygoid muscles were severed. Removal of carcinoma. Tamponade with iodoform gauze. Patient nourished by means of rubber tube for two weeks, when edges of wound were freshened up and united by sutures. In three weeks the external wound had healed, and that of the pharynx completely in six weeks. Movement of the jaw perfectly free, also the acts of swallowing and speaking. Patient remained in this condition for two years when a few suspicious looking ulcerating spots were observed in the cicatrix, and a few months later the relapse was complete.

Case II. Sarcoma of the tonsillar region, occupying most of the pharynx.

Patient, male, æt. 28, had noticed a swelling about the angle of the jaw, right side, some three months before. He has had considerable trouble in swallowing and speaking for the past two months and difficulty in breathing for one month. At times slight hæmorrhage from mouth. On examination a soft tumor, size of goose egg, is found on the right side under the angle of jaw. A soft tumor also seen in the right tonsillar region, involving the whole middle part of the pharynx, reaching downwards to the larynx and upwards to the choanæ. Preventive tracheotomy. Pharyngotomy according to author's own method. The extirpation of the whole mass of tumor necessitated opening the pharynx. The defect in this reached from the choanæ to the larynx. Patient nourished by means of a rubber tube passed into the œsophagus and fastened by sutures to the external skin. Dressings of iodoform gauze. Canula removed from the trachea on the tenth day, the tube from the œsophagus on the twelfth. Discharged cured in four weeks. Breathing and swallowing entirely free, and

voice clear. Patient died three months later, suddenly, but from what cause was not ascertained.

The third case is that of a carcinoma of the left tonsil, involving also the palatal arches and extending to the hard palate. Patient, male, *æt.* 61, badly nourished and very anæmic, died two and a half hours after the operation from collapse and the aspiration of blood. Tracheotomy was not performed in this case. The loss of blood during the operation was considerable.

The fourth case was a carcinoma of the lateral pharyngeal wall. Male, *æt.* 42, had observed a hard swelling at the angle of the jaw, left side, for two months. For some time the difficulty in swallowing and breathing has been very great. The tumor had its origin in the left tonsil and involved both palatal arches, the choanæ, and furthermore the lateral pharynx wall, and reached downwards to the larynx. Pharyngotomy with preventive tracheotomy. The whole lateral wall of the pharynx, involved by the disease, from the epiglottis to the choanæ, was excised from without, also the palatal arches and the left half of the soft palate. The tissues were found infiltrated to the base of the skull. Dressings as in Case 3. On the sixth day, ligature of the carotid was necessary to control hæmorrhage. Canula removed from trachea in three weeks, and œsophagus tube in four weeks. Patient left clinic in six weeks, the external wound having healed. He complained much of severe headaches before leaving. The mass of tumor left in the naso-pharyngeal space was found to be rapidly increasing in size. Patient was not seen again. In regard to this latter case, Mikulicz remarks that in his opinion, malignant neoplasms in the upper naso-pharynx do not offer any field for operative treatment, as a thorough extirpation of a diffusely extended carcinoma is not possible in this place. A careful examination in the narcosis should therefore be made before operating. If extirpation of the tumor be impossible, enucleation of the ramus of the jaw should be undertaken, as proposed by Küster, in order to relieve the patient at least of the painful condition of lock-jaw. If the insertions of the masseter and internal pterygoid remain intact, the acts of chewing and speaking will not be interfered with, and the position of the two rows of teeth to each other little, if any, changed by this latter operation. The usefulness and in

many cases the necessity of a preceding tracheotomy is specially mentioned. The danger of neglecting this is seen in Case 3, where the collapsed and anæmic patient had not sufficient strength to expectorate the blood, which had entered the larynx. 30 p. c. iodoform-gauze was used for dressings. Symptoms of iodoform intoxication, however, appearing in the first case, on the eighth day, 10 p. c. iodoform-gauze was substituted. As a result of his experience the author remarks that such symptoms of intoxication appear especially often in cases where the secretions from large wound surfaces, saturated with iodoform, enter the digestive tract. As soon as such symptoms appear, he removes the gauze, and uses dressings of mull moistened with a solution of acetate of alumen. These may be continued from four to five days without injury to the wound. The introduction of a rubber tube into the œsophagus at the close of the operation, for feeding the patient, was altogether satisfactory, and spared the patient the pain which would have followed such a procedure later on, affording, also, the necessary rest to the wounded parts.

Regarding the different methods of operating, the author has but little to say. He thinks, however, the subhyoid pharyngotomy especially adapted for tumors situated more anteriorly. Küster's method, where the incision is made through the cheek, from the angle of the mouth to the anterior edge of the sterno-cleido-mastoid muscle, he recommends for tumors arising from the alveolar process and mucous membrane of mouth. In conclusion the author gives some interesting facts concerning the occurrence and course of carcinoma of the tonsils and lateral pharyngeal wall. He has observed seven cases in three years. Mackenzie has also reported seven cases. Of the latter five were males, aged respectively 22, 37, 47, 58 and 67 years, whilst the ages of the two females were 34 and 43 years, respectively. Of Mikulicz's seven cases, five were males, two females, with ages ranging from 42 to 65 years. Küster had two cases, both males, aged 49 and 61 years. This makes a total of sixteen cases, twelve males and four females. The left tonsil was the seat of the disease in six of the author's seven cases, and in both of those of Küster. In these nine cases the palatal arches and the palate were invaded in eight, the base of the tongue in five, the posterior pharynx wall in four, the supra-and

inframaxillary bones in three, the carcinoma extended to the larynx in three, and upwards beyond the choanæ in two cases.

The first symptoms of the disease appeared three to fifteen months before consultation, but had existed probably prior to this without being remarked.

Pain in swallowing occurs relatively late, generally when the carcinoma has involved the palatal arches, palate, tongue and jaw bone. The diagnosis will not be difficult, when the tumor has reached the stage of ulceration, but at the commencement of the disease we are often in doubt as to its true nature.

L. S. PILCHER.

THE PARIS SOCIETY OF SURGERY AND THE QUESTION OF OPERATION FOR TUBERCULOUS JOINT DISEASE.

At the meeting of the Paris *Société de chirurgie* for the 10th of February last, Dr. Chauvel reported in detail upon a paper by Dr. Mabboux, of Lille, on the question of prognosis and operation in the tuberculous. The paper of Mabboux was based upon two cases of tuberculous joint disease, (1) the first originating in caries of the fourth metatarsal bone of a young soldier, with resection of the disease, which was followed by synovitis of the peroneal sheath and, later, by suppuration of the tibio-tarsal articulation and concomitant pulmonary tuberculosis; after three months, all the symptoms continuing to be more unfavorable, the foot was amputated, and rapid cure followed, with abatement and final disappearance of the pulmonary symptoms, the patient being in the enjoyment of robust health at the time of the writing of the paper; (2) the second case was apparently less favorable to the theory of operative intervention; a corporal of the line, æt. 24, entered the hospital at Lille in May, 1885, for arthritis of the left knee, consecutive to a fall received a month previously. He had had hæmoptysis in 1884 but had been well since then. In spite of immobilization and all other methods, the disease progressed until August 15, when the contents of the joint were found on aspiration to be purulent; indura-

tion at the apex of the left lung was observed and the patient was harassed with a frequent cough. Arthrotomy was performed on the 24th, the pus evacuated, the fungosities removed and the denuded bone scraped. This was followed by redoubled suffering, probable meningitis and more pronounced pulmonary symptoms, with the formation of eschars at the sacrum and heels. In September, the pain became atrocious, and the emaciation extreme, the exhaustion complete, gangrene imminent and early death certain. In spite of the gravity of the situation, and in deference to the wishes of the moribund patient, the thigh was amputated in the lower third. Microscopical examination of the knee showed the lesions of tuberculous arthritis in the highest degree of development. Immediately after the operation, sleep returned to the patient, pain ceased, the wound cicatrized and he seemed to be saved, but on the 8th of October the fever reappeared, the stump ulcerated, the tuberculosis seemed to be localized in the abdominal viscera, and death ensued on the 18th of January following, but with no recurrence of the atrocious suffering for which the operation was performed. In view of the fact that there had been no therapeutic or operative success—nor indeed was one expected—was the operation justifiable? The author replied in the affirmative, considering the relief from pain and the consequent euthanasia to be abundant justification. That the later progress of the tuberculous disease was not due to the traumatism of the operation is emphatically shown by the manifest amelioration of the symptoms during the following twenty-five days, showing that, on the contrary, the disease was temporarily relieved by the operation, and only resumed its regular course after the beneficial effects of the intervention had been exhausted.

Mabboux concludes that (1) the existence of pulmonary tuberculous lesions, even of an advanced type, is not a contraindication to an amputation of a member affected with suppurative tuberculous synovitis, when the latter lesion predominates the pathological scene and menaces life. (2.) The operation, by suppressing the causes of exhaustion due to the articular lesion, can stop the progress of the visceral lesion, to the extent of replacing the lungs in a perfectly normal state. (3.) Even in cases where the phthisis follows its course, amputation of the diseased member may improve the condition of the patient, if only

by relieving the intolerable pain; consequently the policy of non-interference in cases where a curative action can not result, should not be carried into the treatment of this affection.

M. Chauvel, in commenting upon the paper, referred to the diametrically opposite views held by various surgeons with regard to the propriety and extent of operative interference and remarked that a precise, invariable rule with regard to action could not be laid down, but that each case must be treated as an individual entity. If the failure of operations and the prompt deaths attributable to surgical traumatism impress us, we must also not forget the deaths, slower, perhaps, but certainly more numerous, which result from non-intervention. These latter are attributed to the progress of an incurable disease, but is the physician any more justifiable in failing to interfere than he would be in any other otherwise incurable affection, such as œdema of the glottis or strangulated hernia?

Osseous and articular tubercular affections are not generally proper subjects for incomplete intervention. Perhaps the day is not far distant when osseous and articular tuberculosis, local tuberculosis, will be considered as a neoplasm, the more malignant from its tendency to generalization, and treated under the same rules as sarcoma and carcinoma. When the extirpation of the disease in place is impossible or when the anatomical conditions do not permit the complete and certain ablation of all the infected tissues—conditions not rarely present in osteitis and synovitis—early amputation is indicated. In the cases of Mabboux he thought the operation was delayed too long in the second case, if not in the first.

As shown by these cases, the existence of pulmonary tuberculous lesions should not be considered a contra-indication to operation. Cases of temporary cure under these conditions are common, and permanent cures are not the exception. Two years previously, M. Chauvel amputated the leg of an old soldier, affected with tuberculous disease of the tarsus with pulmonary and peritoneal tubercularization, who had been bed-ridden for two years, and lay in a state of great exhaustion from fever and suppuration. Against the surgeon's judgment and in deference to the patient's wishes, the operation was performed, and, after repeated periodical hæmorrhages from the stump, it cicatrized,

and the patient, fully recovering after a tedious convalescence, was discharged completely cured. In closing, M. Chauvel emphasized the lesson of Mabboux's second case, that one of the indications for amputation in tuberculous joint-disease may be the relief of pain, even when the cure of the disease is hopeless.

M. Despres, although considering it almost useless, wished to protest against the belief in the theory of the generalization of tuberculosis by the propagation of a microbe. The question of amputation had long been under discussion, and, as it was still on trial, no absolute rules could be established for its application. He had amputated the thigh of a patient who had an ulcerated knee-joint disease and hæmoptysis. He was cured, but died two years later with tubercular ulcerations on the other leg. Tuberculous patients, affected with non-suppurating joint-disease, should be treated by immobilization and compression. Amputation may be of service to young men.

M. Lucas-Championnière considered the operation for the relief of intense pain, but without hope of ultimate cure, to be justifiable, in spite of the resulting damaging effects upon the statistics of the operation. The true question was whether an operation for the removal of a tubercular lesion in a tuberculous patient was good treatment. Ollier had shown in a recent work that operations, even partial ones, could be successfully performed on the tuberculous, and that in resections, diseased osseous parts could be left without preventing a cure; and after operations the patients grow fat and are greatly improved in physical condition. New trouble may supervene later, it is true, but even radical operations do not prevent later developments. He was then an advocate of surgical intervention in the tuberculous but, unlike M. Chauvel, he believed in the utility of partial ablation in certain cases.

M. Verneuil believed that in tuberculosis as in cancer, the surgeon should operate for the temporary relief of suffering, without necessarily expecting any permanent curative effect. But in tuberculous patients, affected with strumous synovitis, operative intervention was necessary only in case of the existence of sinuses and suppuration, for many cases were cured by compression. He did not perform more than two or three amputations a year, for tuberculous articular affections and still

fewer resections. Resection of the hip-joint alone has caused more attacks of meningitis or rapid generalization of tuberculosis than all other operations performed in these conditions.

M. Berger had in a previous discussion cited some cases of rapid generalization of tuberculosis after amputation for chronic synovitis, but on the other hand, he had seen the disease clearly diminish in at least one case, in which he amputated the thigh of a young man in whom unequivocal signs of tubercularization existed, and who afterwards regained the best of health. And in an old man in whose lung cavities were discovered, and who was in a state of extreme debility, he saw radio-carpal amputation followed by an unexpected recovery. He believed that incomplete resections were bad practice in the tuberculous, and that primary union must be sought for, operating only in healthy parts.

M. Reclus had been greatly impressed by a case in which Lisfranc's disarticulation had been performed for caries of the first and second metatarsal bones, and in which primary union was obtained, but, after a few days, the patient developed a large fungus in a counter-opening on the plantar surface. The surgeon who succeeded M. Reclus in charge of the case, was frightened and proposed a second amputation; the patient, however, recovered without further interference so completely that a cast was made of the stump as a typical result of Lisfranc's operation.

M. Pozzi did not think that it was indispensable to operate in healthy parts when amputating in the tuberculous; he had made an amputation in the middle of the leg of a young female in the midst of fistulous sinuses, which had to be scraped and excised to refresh the flaps, and he obtained a very beautiful primary union. However, he considered that all diseased bone should be removed.

M. Richelot had removed only a part of the glands in a greatly emaciated young man with large suppurating glandular masses at the neck, in spite of which union was obtained and the glands, not removed, finally disappeared, while tuberculous disease of the elbow was developed.

M. Polaillon recalled that he had, two years previously, presented a patient whose wrist he had resected for tuberculous arthritis without

removing all the diseased parts, but who had recovered; he had also cited several cases in which amputation had improved the condition of tuberculous patients.

M. Le Fort believed that suppuration was not so much to be feared after amputation as might be thought; patients who became greatly emaciated before operation, while losing but small quantities of pus, often grow fat when, after amputation, the suppuration is abundant; a small amount of osseous suppuration is often sufficient to greatly exhaust patients. In his work on resections of the hip, he was able to give the later results of the operation in a number of patients and could see that death by meningitis was not by any means so frequent as M. Verneuil asserted. After resections the bone trouble was sometimes cured, while the disease recurred in the soft parts; he considered that incomplete resections did not give as good results in general as the complete. In conclusion, he remarked that he would consider tuberculous disease with great debility contra-indications to operation in aged but not in young patients.

M. Trelat believed that in operating upon a tuberculous patient all the diseased parts should be removed; if primary union failed, the minimum of suppuration should be sought for. However, the tuberculous patient is an individual affected with bacilli, and the operator can never be sure that he has removed the entire disease; cases of osteo-myelitis exist for years without becoming apparent; there was always then a certain amount of ignorance upon the part of the surgeon and a consequent amount of uncertainty as to the result; if a patient had been completely examined, however, before deciding upon operation, it would generally benefit him. He thought there were good reasons for holding that amputation was preferable to resection, but it could not be said that tubercularization invariably led to amputation rather than resection. The form and extent of the lesion should alone decide that question.

JAMES E. PILCHER.

ON THE PRESENT STATE OF KNOWLEDGE IN BACTERIAL
SCIENCE IN ITS SURGICAL RELATIONS.

(Continued from page 57).

G. GONORRHOEA.

The discovery of the specific organism of gonorrhœa by *A. Neisser* in the year 1879¹ is one of those scientific achievements which have not as yet led to the practical therapeutical results which such a discovery might well have justified us in anticipating. Perhaps this is the chief reason why so many surgeons of the present time hesitate to include the *gonococcus*—as the organism in question has been designated, with more brevity than logic, by its discover—in their articles of medical faith. Our faith, however, varies with our understanding, and it is with the gonococcus somewhat as Bacon says, speaking of Atheism, “a little learning inclineth man’s mind to doubt, but depth in philosophy again bringeth men’s minds about to belief.”

The history of the development of the doctrine of the gonococcus is in point of fact somewhat singular. Discovered, as it was, comparatively long ago, and repeatedly and unexceptionally found in all well-marked cases, there is a very conspicuous lack of successful culture experiments and of reliable inoculation experiments, even at the present day. The reason for this is to be looked for, on the one hand, in the fact that producing pure cultures of the gonococcus on sterilized soils is a very difficult matter of performance; and, on the other hand, the germ is not one that easily proves infectious to animals, and there is a very natural reluctance on the part of experimenters to performing inoculations upon themselves or others, on account of the manifold dangerous complications so frequently attaching to the disease.

We possess only two reports of inoculation experiments that are

¹ Ueber eine der Gonorrhœe eigenthümliche micrococcus form. Vorläuf. Mittheilung. Centralbl. f. d. Med. Wiss. 1879. No. 28.

wholly satisfactory, the one by *Bockhardt*,¹ the other by *Bumm*.² Inoculation with cultures on the human subject, it is true, have been performed by others as well—among whom are to be mentioned Bókai, Chameron, Sternberg; but the first of these has published such incomplete accounts that they are not admissible for discussion, and the latter gentlemen, as well as Neisser himself and Oppenheim, were not successful in obtaining the pure culture of the true gonococcus, as Bumm has shown; so that their negative results lose all their power of conviction.

The germ itself—to begin with the author's own review of the subject³—is described by Neisser as a micrococcus, always appearing in couples as diplococcus; the single cocci are not perfectly spherical, but are flattened at one pole to such an extent that their shape resembles a segment of a sphere, and the whole appears not unlike a breakfast-roll. The single cocci turn their flattened poles towards each other, but a narrow space separates them, and there is no contact.

These diplococci multiply by bipartition each micrococcus becoming divided into two, so that groups of 4, 8, etc., are formed, but never chains. The halving process of each successive generation occurs in a line at right angles to that of the former generation. These groups of pairs are always to be found in connection with the pus-cells, and only when present in great numbers are single pairs found free in the serum.

They are always present in gonorrhœa, even in those cases of sixteen months standing, though they are not then so readily found; they are never present in other suppurations, but those of gonorrhœal origin. They are, moreover, usually the only ones present in gonorrhœal discharge.

The presence of these peculiar organisms in gonorrhœa was soon corroborated after Neisser's communication by numerous observers.

¹ *M. Bockhardt*, Beitrag zur Ätiologie und Pathologie des Harnröhrentrippers. Vierteljahrschr. f. Dermatol. u. Syph. 1883. p. 3. Sitzungsher. d. phys. med. Ges. z. Würzburg. Sept. 1882.

² Der Mikro-Organismus der gonorrh. Schleimhautrekrankung. Wiesbaden. 1885. | F. Bergmann.

³ Die Micrococcen der Gonorrhœe. Referirende Mittheilung. Deutsch. Med. Wochenschrift. 1882. P. 279. 13. May.

Bókai, Weiss, Aufrecht, Ehrlich, Brieger, Gaffky, were among the first to publish assenting statements, and ophthalmologists, such as Sattler; Leber, Haab, Hirschberg and others very soon testified to the occurrence of the germ in gonorrhœal conjunctivitis. Bockhardt found them present in 258 cases of gonorrhœa, in 14 cases of vaginal blennorrhœa, in 2 cases of suppurative cervical catarrh, etc. More recently Lundström¹ found them in all of the fifty cases he examined, one of which was of two years standing—and every clinical student has since been able to satisfy himself of their presence.

The staining is best done with methylene blue; the use of well-colored preparations and of Abbé's lens is indispensable in examining the purulent secretions, which should be dried onto cover-glasses in a thin layer and affixed to them by direct heat.

It would, however, be erroneous to suppose that the shape of these diplococci is the main characteristic point in diagnosis. According to Bumm there are no less than seven different species of diplococci which present the same shape in appearance and grouping as the specific gonococcus. These, however can easily be distinguished from the gonococcus by means of culture experiments, since none of them grow in the same manner on the soils.

On the contrary the main differentiating feature of the gonococcus is its situation inside of its cell, the lodgment in the protoplasm, and its further development beneath the surface of the leucocyte. This ability on the part of the micro-organism to penetrate into the substance of the cells is no doubt the main reason why the proposed abortive methods of treatment of gonorrhœa have proved so little successful.

According to Bumm, who had the opportunity of microscopically examining twenty-six cases of ophthalmal blennorrhœa of infants—a gonorrhœal disease acquired from the mother through contagion during parturition²—the germs actively penetrate into the mucous membrane, entering between the epithelial cells, and advancing so far as the

¹ Studier öfver Gonococcus. Diss. Helsingfors. 1885.

² O. Haab, Der Micrococcus der Blennorrhœa Neonatorum. Festschrift. Wiesbaden. 1881. Correspond. f. Schweizer Aertze. 1881. 3, 4.

papillary body of the mucous membrane, all the while increasing in numbers.

In consequence of this invasion leucocytes appear in great quantities, suppuration ensues, the epithelium becomes partly elevated and detached, and eventually fibrinous exudation takes place.

The whole process in time comes to a end, partly because the micro-organisms penetrate no deeper than the papillary body, and probably also for the reason that the nutritive soil-substance of the parts becomes exhausted. The leucocytes then simply convey the micro-organisms to the surface, and, together with the epithelial cells, assist in rebuilding the destroyed tissues.

Bockhardt¹ has furnished a report of microscopical examinations of gonorrhœal inflammation of the urethral mucous membrane. Having procured a pure culture of the gonococcus in the fourth generation from Fehleisen, he inoculated a patient suffering from general paralysis of the insane by urethral injection of a quantity of the pure culture, and observed the development of a typical gonorrhœa after three days. On the tenth day the patient chanced to die in a paroxysm and the autopsy revealed the following conditions. There was abscess of the right kidney, hyperæmia of the mucous membrane of the bladder with necrosis of minute portions; the mucous surface of the urethra was covered for a distance of 6 centimetres from the cutaneous orifice with viscous bloody exudate; the corpus cavernosum of the urethra was swollen.

The secretions of the mucous membranes as well as the kidney fluid contained the specific cocci, which were also found enclosed in the substance of the white blood-corpuscles in the mucous and sub-mucous tissue of the urethra.

The lymph-spaces and ducts furthermore contained micrococci, and some were observed inside of the white blood-corpuscles in the capillaries.

These anatomical data make it easily conceivable why it is that true gonorrhœa presents so extended a course, and the microscopical examination consequently admits of a differentiation between true gon-

¹l. c.

orrhœa and a non-specific urethritis, as well as of a prognosis as to the time of duration, just as, conversely, a urethritis which runs its course in a few days, permits the conclusion that it is not due to the gonococcus. In some of the European clinics, notably at Würzburg, no case of gonorrhœa is diagnosed, until the gonococcus has been found. The presence of the specific germ is also of vast practical importance in the diagnostic estimation of gynæcological cases—nor is any great amount of skill or time required for such examinations, which may even be effected before the patient leaves the examining chair.

Inoculations of gonorrhœal pus itself, containing diplococci, have frequently enough been observed to call forth the specific disease. Every practitioner has opportunities of witnessing inoculation experiments on the conjunctiva in his daily practice, and the earnestness with which surgeons warn their patients of the dangers of such inoculations is the best argument in favor of the gonococcus.

Detailed accounts of such inoculations have been published by Welander,¹ who gives three cases of successful inoculation, and so-called control-cases, in which inoculation with pus not containing the organisms caused no inflammation.

Bumm has also shown that gonorrhœal secretion which is free from micrococci does not produce gonorrhœal inflammation. All of which tends to show that it is in point of fact the gonococcus which is the true cause of contagion.

Anatomically the gonococcus has been demonstrated up to the present time in gonorrhœal affections of the male and female urethra, the bladder, the kidneys,² in peri-urethral abscess,³ in gonorrhœal bubo,⁴ in gonorrhœal gonitis,⁵ in gonorrhœal affections of the rec-

¹ Quelques recherches sur les microbes pathogènes de la blennorrhagie. *Gazette Médicale*. 1884, p. 267. *Nord. Med. Arch.* Vol. XVI. No. 2.

² Bockhardt, l. c.

³ Welander, l. c.

⁴ M. Wolff.

⁵ Kammérer, Ueber gonorrh. Gelenkentzündung. *Centralbl. f. Chir.* 1884. No. 4.
M. Petrone. Sulla natura dell' artrie blennorrhagica. *Rivista Chir.* 1883. No. 2.

tum¹ of the uterus, in certain abscesses of Bartolini's glands,² and in gonorrhæal conjunctivitis, although in the latter affections other micro-organisms are frequently present as well.

As regards the cultivation of the germ, reliable cultures appear to have been achieved by Bumm, whose statements in this regard agree with Krause, Leistikow and Löffler, the cultures by other experimenters being more or less open to objection.

The gonococcus, it appears, can only be cultivated on blood-serum soils, where it develops as a very fine, scarcely perceptible film of greyish-yellow color, when viewed in direct light. The surface of the colony appears smooth and moist; its margins appear gradually diffused into the surrounding parts; the serum soil does not become liquefied. The gonococci appear in groups, developing in close proximity to each other.

The cultures thrive best at a temperature of 30° to 34° C. in a moist atmosphere. Temperatures above 38° C. destroy the cultures. The growth progresses very slowly; and to obtain good cultures it is advisable to inoculate fresh soils after the first colony has developed for a period of 24 hours.

With such a pure culture as this Bumm performed his inoculation experiment, which, even if it is only a single one, still commands attention, since it answers every bacteriological requisition.

He introduced a minimal quantity of the pure culture into the urethra of a healthy woman, and shortly after was able to observe the development of a specific gonorrhœa.

Considering the difficulty apparently attendant upon the procuring of pure cultures and the scientific scruples connected with the inoculation experiments on the human body, there appears to be no reason for not accepting the evidence contained in the two inoculation experiments above described, nor for not according the gonococcus equal dignity with the tubercle-bacillus and the micro-organisms of suppuration.

W. W. VAN ARSDALE.

¹ Bumm, *Archiv. f. Gynæcol.* 3, p. 339.

² Bumm, l. c. *E. Arning*, Ueber das Vorkommen von Gonococcen bei Bartolini-tis. *Viertel jrschrft f. Dermat. u. Syph.* 1883, p. 371.

TREATMENT OF STRICTURE OF THE URETHRA BY ELECTROLYSIS.

It is to be regretted that the discussion on Dr. Steavenson and Mr. Bruce-Clarke's paper on the above subject at a recent meeting of the Royal Medical and Chirurgical Society should have taken place so late in the session, and to this and to the lateness of the hour must be attributed the paucity of speakers.

The subject is one of great interest. Six cases were brought forward which had been treated by this method, in none of which had recontraction taken place, though it must be admitted that a sufficient interval had not elapsed to permit judgment to be passed as to the permanency of cure.

In the first case rigors occurred, but this can scarcely be wondered at when it is remembered that both gentlemen were employing this method for the first time.

We regret that more details were not given concerning the number, size, position and character of the strictures. We note also that,

lthough no recontraction is said to have taken place, it does not appear that a thorough examination was made with a bougie à boule, without the aid of which slight constrictions are difficult to diagnose.

The *modus operandi* employed was as follows: A gum-elastic or celluloid bougie with a wire running down to the centre terminating in a metal end, forms the electrode, this being connected with the negative pole is held gently pressed against the stricture, and should be of size larger by 2 or 3 mm. than is the stricture's calibre. To the positive pole is attached a pad electrode which is placed over the sacrum, the patient lying upon it. The battery used is Stoehrer's 30 cell. A current strength of from 5 to 8 milliampères is found requisite, which is gauged by means of a galvanometer.

In cases of eccentric stricture a funnelled electrode can be used, passed over a long catgut bougie which has previously been passed through the stricture, or filiform guide bougie may be passed, to which is screwed the electrode. By this means the electrode cannot fail to traverse the proper course.

After the passage of the electrode through the stricture, which may take from two to twenty minutes, the patient goes home and the urethra is left untouched for fourteen days. The treatment can then be repeated if necessary. Speaking generally, from two to three applications are required.

In the discussion which followed the writer of this brought forward a case of long-standing stricture where electrolysis had succeeded after treatment by dilatation had failed. Although on commencing electrolysis the stricture only admitted a No. 4 bougie olivaire, after three applications a No. 28 passed. A month after the cessation of all treatment a careful examination of the urethra with a 22 bougie à boule failed to detect any trace of stricture.

Mr. Berkeley Hill complained of the want of details in recorded cases. He had tried electrolysis by means of a needle passed into the neoplastic tissue, the result being that the stricture got worse instead of better. Whatever good may have resulted from this plan of treatment he believed was due to dilatation by means of the electrode and not to electricity, and in this Mr. Buxton Browne agreed.

In the presence of the numerous cases now on record, we cannot but think that electrolysis is capable of causing strictures to disappear and probably of effecting a permanent cure. Much, however must depend upon the way of carrying out the method. It appears that Mr. Fenwick has tried it in a good many cases at St. Peter's Hospital, but without much success. One reason of failure being that only weak currents were used and, working without a galvanometer, these were not accurately gauged. Mr. B. Hill tried a method altogether different and failed; nor can this be wondered at, when one considers the plan he pursued.

In order to thoroughly investigate the electrical treatment of stricture it is necessary, that cases of well marked organic stricture (and for preference those for which dilatation has been found to be ineffectual) should in the first place be submitted to some well-known surgeons, concerning whose powers of diagnosis there can be no question. These same men should at the expiration of treatment, and possibly again after the lapse of a year, examine and report on these test cases. It

seems to us that only in some such way as this can this question be satisfactorily settled.

To further this object it is announced that at St. Peter's Hospital for Stone and Genito-Urinary diseases a special department is being instituted for the treatment of stricture by electrolysis, to the practice of which all medical men are invited.

F. SWINFORD EDWARDS.

INDEX OF SURGICAL PROGRESS.

GENERAL SURGERY.

I. On Tuberculosis of the Mammary Gland and Some Other Rare Cases of Surgical Tuberculosis. By Dr. O. HABER-MAAS (Tübingen). To the number of affections which are becoming recognized as tubercular by the microscopical demonstration of tubercle-bacilli contained therein, the author adds muscular and mammary tuberculosis, illustrating them with cases, and also gives two cases of tuberculous pre-patellar bursitis.

After reviewing the six reliable cases already reported the author adds two of his own of tuberculous mammary disease, and proceeds to discuss the subject.

The affection attacks only females both before and after lactation, and independently of traumatisms. In many cases other tuberculous affections existed. The course of disease is insidious, but not unexceptionally. The disease may attack the gland primarily or secondarily. Bacilli were found in both cases of the author's. Diagnosis is difficult until suppuration ensues. The treatment indicated is extirpation of the entire gland; although circumscribed foci may be removed by partial excision.

The author's two cases of tuberculous affection of the pre-patellar bursa were both cases of primary synovitis occurring in perfectly healthy individuals.

The last case is one of multiple tuberculous foci occurring independently in the muscles of the upper and lower extremities and of the body in a man 54 years of age, who was suffering from caries of the fifth dorsal vertebra. The tumors varied in size from that of a pea to a hen's egg, and were situated inside of the sheath of the muscles. Microscopically they contained tubercle-bacilli. The case is considered as one of dissemination from the vertebral focus.—*Beiträge zur*

klin. Chir. Mitth. aus der chir. Klinik. zu Tübingen. II. Bd. 1. Heft. II.

W. W. VAN ARSDALE (New York).

II. The Treatment of Lupus. By Prof. TRENDLENBURG.

In describing the affection the author fully accepts its tubercular origin. It follows that treatment to be permanently successful should seek to destroy all the affected tissue.

Formerly internal remedies were much in vogue. Sweat cures and Trittmann's decoction (sarsaparilla) appeared at times to produce some effect.

Caustics he likes best in the form of pencils, and nitrate of silver is preferable to potash since the latter is too diffuent. Better than these, however, is the actual cautery in the convenient form of the pointed thermo-cautery. The action is then strictly localizable. In Germany at least the method most in favor is that introduced by Volkmann, viz., mechanical destruction and removal of the nodules by means of the sharp spoon. This plan, when followed by cauterization with a Paquelin, he considers specially commendable. Volkmann's punctation treatment is only adapted to light cases, and does not appear to be very certain.

Various methods succeed if each ulceration, every nodule and suspicious spot is included, and the operation—under narcosis of course—is repeated at the right time. In bad cases no single method protects against relapses. Lupus will also heal out under washings with solution of sublimate.

In excision with subsequent plastic covering it is well to wait with the latter until solid cicatrization has taken place, and thus avoid taking away too much or too little. The transplanted flap is not safe from infection, despite Hueter's assertion. True such an operation or the resulting inflammation seems to have a favorable influence on the cure. He corroborates the old observation that an erysipelas also has a favorable effect. In cases where the lupus is closely localized to a wing of the nose and its corresponding mucous membrane he often splits the nose, close to the septum, up to the nasal bone. It can be held open and the affected parts treated with the sharp scoop and the

thermo-cautery, when it is again sewed together. The fine scar is of little account, disfigurement being inevitable.—*Deutsche Chirurgie, Lief. 33. Haelfte 1.*

W. BROWNING (Brooklyn).

NERVOUS AND VASCULAR SYSTEMS.

I. Secondary Suture of the Median and Ulnar Nerves.

Recovery. By Mr. R. HARRISON (Liverpool). The author narrates the case of a man æt. 21, who, eighteen months before admission, fell through a green house, severely cutting his wrist. There was a mark of a deep cut transversely across the wrist, just above the anterior annular ligament. The hand was stiff and useless, all the muscles were atrophied, and sensation and motion were completely absent in the part supplied by the median and ulnar nerves. The author opened up the scar by a long vertical incision, and dissected out the ends of the ulnar and median nerves; these were found clubbed and incorporated with the scar tissue. The ends of the nerves after dissection of the part were freshened with the knife and brought together as accurately as possible with catgut sutures. The wound was closed and the limb placed on a splint, with the hand slightly flexed. The wound healed quickly. A month after the operation the patient was again placed under ether, when the stiffened hand was subjected to free movement. The amount of stiffness, especially in some of the phalangeal joints, was so great as to occasion considerable difficulty in thoroughly effecting what was desired. For 48 hours after this was done the patient experienced considerable pain in a part that previously had been almost insensible. Shortly afterwards the patient was discharged, improving slowly but steadily. When he was seen after the expiration of about eighteen months, it was found that sensation was everywhere complete where it had been destroyed, except in the little finger, and the recovery of muscular power had been such that he had been able to resume his employment.

H. P. DUNN (London).

II. Union of Nerves of Different Function Considered in its Physiological and Surgical Relations.

By M. GUNN, M.D., (Chicago). After an account of certain circumstances which led to

the conclusion that the difference between motor and sensory nerves is not intrinsic but dependent upon the organization at the end of the nerve, referring in particular to the investigations of Rawa, showing that (*a*) the central nerve apparatus is enabled to innervate organs which do not belong to it as soon as those organs are artificially brought in connection with it; (*b*) the central nerve apparatus is the chief nourishing agency for the peripheral end (of the entire correctness of which, however, there is some doubt) and (*c*) for the reestablishment of function in the peripheral end of a divided nerve, which has been united to the central end of any other nerve, from six to sixteen months time is required, he details certain experiments upon dogs which finally went simply to show that an entire solution of continuity of the nerve of the fore-leg had no effect, there being so free a distal anastomosis, affording a retrograde route for the nervous force, and because of which it is necessary to await the opportunity to institute experimental operations in man. The experiments of Rawa showed that the function could be established where the nerve trunks were laid side by side as well as end to end, showing an elective power in nature by which the corresponding filaments may be brought into harmonious conjunction. The opportunity for an experimental operation presented itself in December, 1885, when, having to resect between three and four inches of the right ulnar nerve for the removal of a neuroma, the author proceeded to graft the distal portion of the divided nerve upon the trunk of the median, denuding the trunk of the latter of its sheath and laying the broadly chamfered distal end of the ulnar upon the denuded side of the median, to which it was fastened by three fine catgut sutures. Healing was complete on the eighteenth day. Immediately after the operation there was complete paralysis of motion and sensation in the parts supplied by the ulnar nerve; on the eighteenth day, examination showed a slight return of sensation along the ulnar side of the ring finger and, in flexing the hand upon the wrist, there seemed to be contraction in the flexor carpi ulnaris, but in the attempt to flex the fingers, there was no response in the terminal phalanges of the ring and little fingers; three months after the operation, there was marked increase of sensation on the ulnar side of the ring finger, but no sensation in the little finger and no increase in the

range of motion; a month later the patient could feel a light touch on the ulnar side of the ring finger; there was no sensation to touch in the little finger, but there was a little feeling of warmth in it, whereas heretofore it had felt and had been cold; there was increased muscular power, and the patient could now adduct the hand with considerable vigor, but as yet has no power over the terminal phalanges. The author also quotes a case of Deprés in which the median was engrafted upon the ulnar by separating the filaments of the latter and interweaving the fringed filaments of the distal median end among them, with the result of partially restoring the functions in the parts supplied by the median nerve, at the date of the report, fifty-four days after the operation.—*Med. News.* 1886. May 8.

III. A Case of Aortic Aneurism Treated by the Insertion of Wire. By J. RANSOHOFF, M.D., (Cincinnati). In a colored man, æt. 35, an aneurism of the ascending aorta, resulting from over-exertion in rowing about two months previously, had been treated ineffectually by iodide of potassium and subcutaneous injections of ergotine. Finally a straight hollow needle with thumb-screw attachment was pushed into the aneurism from the right side and through it was passed ninety-six inches of flexible silver wire. The pain experienced was very slight and, during the introduction of the first forty-eight inches of wire the pulse remained unchanged, but it then suddenly became almost imperceptible and very rapid, the patient became very faint and death appeared to be imminent; stimulants, however, overcame the syncope and the remainder of the wire was introduced without interruption. On the autopsy, the syncope was found to have been due to the passage of a loop of wire beyond the neck of the sac and into the aorta, where it was probably deflected by the aortic valves. There was no bleeding during the operation nor immediately after the withdrawal of the needle. An amelioration of the symptoms continued for two weeks after the operation, but then a change for the worse supervened, great œdema of the right side of the face and the right arm being developed, and, in hope of consolidating this part of the sac, ninety-eight inches of wire were inserted into the sternal portion; some improvement supervened, but the patient died suddenly eight days later, from rupture

of the sac. Autopsy showed the formation of clots about the loops of wire. From his experience in this case and an analysis of fourteen others, the operator concludes that in but thirty per cent. of the cases can death be attributed to the operation and, except in peripheral vessels where so many safer methods are at our command, the practice is worthy of further trial; practiced as a last resort, it has undoubtedly lengthened life, and it is far from improbable that, if often adopted, a permanent recovery will occasionally be obtained in cases that would be hopeless without it.—*Med. News.* 1886. May 29.

IV. Traumatic Aneurism of the Internal Carotid Artery.

By T. F. PREWITT, M.D., (St. Louis, Mo.) A bullet entered the cheek over the malar bone, ranging backward, the injury being followed by immediate and profuse hæmorrhage, controlled by compression from the wound of entrance—there being no wound exit—and from the ear, the latter recurring several times. A gradually increasing swelling appeared, which, three months later, projected into the pharyngeal cavity and rested against the uvula, extending externally from the anterior petrous portion of the temporal to the hyoid bone, and had all the symptoms of an aneurism of the internal carotid artery, together with symptoms indicating injury of the glosso-pharyngeal and, possibly, the pneumogastric nerves. The common carotid artery was then ligatured and the pulsation arrested for a time but soon returned. As a *dernier ressort*, he extended the incision upward in the hope of being able to lay open the sac and apply a ligature to the distal side; dissection, however, revealed that the sac filled all the space between the mastoid process and the condyle and ramus of the jaw, and extended to the skull, to which it was closely adherent, and that further attempts to reach it in that direction were useless, and dressings were applied. Secondary hæmorrhage set in some days later but was controlled by compression with pledgets of iodoformized lint thrust into the sac; epileptoid convulsions, involving the facial muscles and the flexors of the arm and hand set in ten days later and continued at intervals until death on the twenty-ninth day. The diagnosis was confirmed by the autopsy, the ball being found in the posterior part of the sac. In connection with the case, the writer called attention to the extreme rarity

of traumatic aneurism of the internal carotid and believed this case, resulting from a gunshot wound, to be unique in surgical literature.

W. T. BRIGGS, M.D., (Nashville, Tenn.) remarked that he had reported a case of traumatic aneurism of the internal carotid, the result of a stab-wound, operated upon successfully in 1871. At first sight, he considered it to be a small aneurism of one of the branches of the external carotid, but an enlargement of the wound showed his error. Ligature of the common carotid failed to control the hæmorrhage, and the internal carotid was dissected out until the point of injury was reached, the sac opened and ligatures applied above and below it, the patient obtaining a permanent recovery.

D. H. AGNEW, M.D., (Philadelphia), reported a case of a woman with a tumor as large as an orange, just beneath and behind the angle of the jaw, projecting also into the pharynx; it had grown slowly for eight months and was attributed by the patient to a blow on the side of the head. The tumor was materially reduced in size by pressure on the internal carotid artery, had a distinct pulsation and bruit, and he considered it to be an aneurism of the internal carotid; he ligatured the common carotid immediately above the omo-hyoid, but, although the pulsation was diminished, it could still be felt, a fact attributable to its communication with the external carotid, and the external thyroid and lingual arteries were tied, stopping all pulsation. After about a week the pulsation reappeared and could be controlled by pressure upon the carotid of the opposite side, and the common carotid of that side was also tied. The walls of the tumor were very thin and, during a temporary absence of the operator, yielded to ulceration, causing hæmorrhage into the fauces; this was controlled by plugging the sac, but the patient died of septic poisoning a few days later. He had intended, in case of such an accident, to divide the jaw, expose the tumor and apply ligatures to both ends; this latter operation should be a primary one, without waiting for other methods to fail.

A. VAN DERVEER, M.D., (Albany, N. Y.), related a case of aneurism of the internal carotid apparently cured by compression, the patient dying, not long after, of seeming apoplexy.—*Proceedings Am. Surg Ass'n.* 1886.

J. E. PILCHER (U. S. Army).

V. On the Treatment of Teleangiectasia. By Dr. BOEING (Nerdingen). The following method of treating teleangiectasia is recommended by the author, who has applied it in a number of cases with astonishing success. The tumor including the surrounding surface for about 2 mm., is painted once daily for four consecutive days with a 4 p. c. solution of sublimate-collodium, until a white layer about 1 mm. thick has formed.

Case I. Angioma in the middle of the left inner edge of the scapula, 15 mm. long and 11 mm. wide, dark brown and elevated about $1\frac{1}{2}$ mm. above the healthy skin. Two applications were made. On the sixth day the collodium layer had loosened itself about the periphery and was retracted, leaving a suppurating ring about 2 mm. in width. Two days later the scab was removed without pain. On the suppurating, granulating surface thus exposed, no signs of any dilated vessels were seen. Dressings of boramylum. Cicatrization complete in seven days. The patient was a delicate boy of 7 months of age, but showed no reaction from the treatment.

In a similar manner the author treated an angioma 24 mm. long, 15 mm. broad and elevated 3 mm. above the niveau of the skin, situated in the middle of the third spinal vertebra, in a child 9 months of age. Four applications were made. Result satisfactory in every way. In a third case but two applications were made, the angioma the size of a 10-cent piece about, being situated in the middle of the forehead. Cicatrization followed in fourteen days without reaction. The fourth case was an angioma on the edge of the right large labium in a girl 6 months of age. The treatment was much complicated here by the constant wetting of the parts with urine, rendering the healing process slow. The result, however, was entirely satisfactory, as was also that in the author's fifth case.

The contraction of the cicatrix in these cases was very slight, which fact should recommend this mode of treatment especially in cases of angioma of the face. By thoroughly covering the surrounding surface of skin by collodium before the solution itself is applied, little or no pain will be produced, if care be taken. The solution used was the following: R, Hydrarg. bichlor. cor., 0.4; collodii 10.0. For cleans-

ing and preserving the brushes ether should be used.—*Deutsch. Med. Wochen.* No. 17. April 29, 1886.

C. J. COLLES (New York).

HEAD AND NECK.

I. On Compression of the Brain. By Prof. ERNST VON BERGMANN (Berlin). In this article the distinguished exponent of the subject of traumatic intracranial pressure vindicates his theories against certain modern authors who are endeavoring to overthrow the old tenets—more especially against Adamkiewicz of Cracow.

Referring casually to the practical results recently obtained by adhering to the old doctrine, as instanced in the publication of Wiesmann (*ANNALS*, Vol. II. P. 502), where it is shown that twenty out of the twenty-two cases were saved by timely operative interference, the author proceeds to discuss the physical points bearing upon the question of brain pressure.

Adamkiewicz had asserted that the brain was compressible and that compression of its substance produced the symptoms of intracranial pressure. To this the author makes the following reply.

The brain substance proper possesses, physically speaking, a compressibility averaging between that of water and that of glass, which somewhat approximates to that of a 46-millionth part of its original volume. But to effect a compression, even in this degree, a far greater amount of force would be necessary than the cranial cavity could withstand.

It was not permissible to confound compressibility in its physical sense with expressibility, as Adamkiewicz had done, which latter was property belonging to sponges and shared by the brain.

When the blood contained in the capillaries of the brain is driven out by pressure, as the water is forced out of the pores of a saturated sponge by squeezing, the brain loses its nourishment and its function becomes impaired. The effect of such impairment of nutrition upon the nerve-centres is first irritation and subsequently paralysis.

Thus the pulse, for instance, is first rendered less frequent in compression of the brain, by irritation of the pneumo-gastric nerve, and subsequently it becomes more frequent when paralysis of the vagus occurs.

The mechanical action in compression of the brain, therefore, does not actually differ from progressive anæmia of the brain, induced by other conditions.

Adamkiewicz objecting to this theory, that the tension of the liquor cerebro-spinalis could not be increased beyond its natural low tension, because, in the first place, it was of the nature of a transudate, and could not acquire a higher pressure than existed in the capillaries from whence it transudated, and secondly, the exits afforded to the cerebro-spinal liquor were always available—the author refutes both these propositions at length, quoting Naunyn and Schreiber and Landerer in support of his assertions.

Direct measurements of the existing pressure inside of the space occupied by the cerebro-spinal liquor proved the tension to be greater than that of the capillaries. The experiments were performed upon an infant suffering from spina bifida.

By continued forcible manual compression of the tumor it was, in fact, possible to obtain the complete series of symptoms occurring in traumatic compression of the brain, including Stoke's respiratory phenomenon.

Although giving Adamkiewicz due credit for his experiments on localized pressure by the introduction of laminaria tents into the cranial cavity, the author points out that he never denied local alterations in traumatic compressions of the brain, but asserts that the general symptoms are produced by means of general pressure. The experiments on venous pressure performed by Adamkiewicz are criticised, and the opposite results, obtained by Cramer and Mosso, upheld.

As for the assertion that the cerebro-spinal liquor has sufficient outlets to prevent a high tension occurring, it is refuted by the author by analogy with hydrocele, ascites, etc., in which cases the internal pressure is high and the lymphatic system of drainage is pathologically altered.

The paper represents a valuable addition to the former well-known works of the author on the subject, and an especially interesting one, in so far as it contains references to the latest advances in closely related

subjects.—*Arbeiten aus der chir. Klinik. der Königl. Univers. Berlin.*
I. Th. I.

W. W. VAN ARSDALE (New York).

**II. Traumatic Aphasia, Followed by Hemiplegia :
Trephining: Death.** By Prof. J. R. FRASER. Patient, a publican,
æt. 44, fell into a cellar and received a severe blow on left side of fore-
head. Stunned for ten minutes; and was then carried home. Left
frontal region much bruised, and an incised wound over left eyebrow.
Speech indistinct. Walked out on the second day, but returned home
unable to speak, and vomited. On the following day he could speak,
but was giddy. During next seven weeks suffered from frequent pain
in left side of forehead, and had many attacks of sudden faintness and
giddiness. Speech often indistinct. Memory for words became greatly
impaired. No history of syphilis. On admission to Royal Infirmary he
complained of slight pain in left frontal region, and distinct tenderness.
Indistinct cicatrix over left eyebrow. No paralysis. Temp. 98°. Un-
derstands everything said to him, and answers sensibly. Cannot name
articles presented to him, but recognizes their names. Can write, but
spelling is entirely at fault. Thus, he calls a knife a "nob," and then
writes it "sotpa." When asked to write "I will come" he wrote "If
hayh good," then stopped, shook his head, and said it was wrong.
Can copy correctly, and understands written language. Decided im-
pairment of right side came on. Complained of "pins and needles"
in right hand. Memory for names quite absent.

Hemiplegia became almost complete. Pupils unequal—evacuations
passed involuntarily. Optic discs pale. Contracture of flexors of right
elbow. Became semi-comatose.

He was now trephined over left inferior convolution. On opening
dura mater, nothing abnormal could be seen, no signs of inflammation
of the membranes, and no accumulation of pus or other fluid. A fine
cataract knife was introduced into brain substance in three directions,
but no pus was found. Wound closed and dressed antiseptically. No
improvement in condition. Temperature rose to 107° three days after
operation, and patient died. Necropsy. Membranes of brain healthy.
Convolutions, especially on left side, flattened. Trephine wound im-

mediately over commencement of Sylvian fissure. Beneath wound were several small ecchymoses of recent origin, the surrounding brain tissue being pale and apparently abnormal. On removing the brain, the left hemisphere, but especially the temporo-sphenoidal lobe, was pale and swollen, and decidedly larger than the right. The lateral ventricles were dilated and contained an excess of clear serous fluid. On section immediately through centre of trephine wound the whole of the temporo-sphenoidal lobe was seen to be occupied by a large glioma and surrounding softening; the tumors extended backwards as a uniform infiltration as far as the limit of the posterior bone of the lateral ventricle. It had invaded Broca's convolution, and the adjacent parts of the ascending frontal and parietal convolutions. Immediately beneath the superficial ecchymoses in Broca's convolution there was a recent hæmorrhage about the size of a walnut. A small nodule of tumor, of a similar nature and as big as a cherry, was situated in the right hemisphere at the middle third of the ascending parietal convolution.—*Lancet*. Feb. 27. 1886.

III. To Remove Foreign Bodies From the Ears. By JONATHAN HUTCHINSON, F.R.C.S. Mr. Hutchinson recommends that a silver wire-loop should be used instead of either forceps or scoop. He says he never uses either of the latter instruments, has always found the wire-loop most successful. It is impossible for it to injure the membrane or canal. After having put the patient under an anæsthetic, the loop is introduced gently into the ear and turned about till it is believed to be behind the foreign body. This often requires a little time and patience.—*Brit. Med. Journ.* April 10. 1886.

IV. Alveolar Abscess With Thrombosis of Cavernous Sinus. By PEARCE GOULD, F.R.C.S. Patient, a woman æt. 57, was admitted into the Temperance Hospital with the mouth and teeth in a foul state; a sloughy opening was seen in centre of right cheek. An incision was made into the tissues over the jaw from the outside, where fluctuation was detected over the lower part of masseter; the swelling of face subsided a little after this, but the patients' general condition remained very unsatisfactory. Six molar teeth were extracted, and a

probe passed through external opening detected bare bone. Four days after the extraction of teeth an abscess appeared above external angular process of orbit and another in posterior triangle of neck, but external jugular was not thrombosed. Patient became drowsy; great œdema of the orbit with some ptosis of right and less of left. Asthenia increased. Some rigors, conjunctivæ yellow, and motions colorless. Became comatosed and died. Necropsy—several globular abscesses were found in lungs with dense walls, and no signs of adjacent inflammation. Liver enlarged and fatty; kidneys healthy. Necrosis of outer part of right side of lower jaw; temporal muscle discolored, but not actually purulent. Lymph was detected along basilar process of occipital bone and sella Turcica. Right cavernous sinus greatly distended, and contained greyish-yellow broken down pus and clots; right ophthalmic vein similarly affected, and the circular sinus with the superior petrosal on the right. Inferior petrosal and lateral sinuses healthy. Left cavernous sinus contained a clot, of which the inner part was yellow.—*Lancet*. March 27. 1886.

H. H. TAYLOR (London).

V. Removal of a Tumor of the Brain. By J. O. HIRSCHFELDER, M.D., (San Francisco). A man, æt. 32, about eighteen months previously, began to suffer from pain in the head in the early morning hours with occasional dizziness during the day; next, slight but progressive loss of power in the left leg and arm; the eyesight grew dim and amaurosis became nearly complete; had occasional epileptiform seizures, irregular in occurrence, during which he remained conscious and which began about the same time as the headaches, with spasms and jerkings of the muscles of the left side. Physical examination showed the left labio-nasal fold obliterated and the left angle of the mouth drooping, when closed, and more, on showing the teeth; paresis of both upper extremities, with strength of left hand slightly diminished, and loss of muscular sense in left upper extremity and less in the lower; slight anæsthesia of the terminal branches of the trigeminal nerve on the left side but sensation normal in upper and lower extremities of both sides; tendon reflex increased on both sides, especially the left, striking below either patella causing contracture of the muscles on

the opposite side; he tottered on standing with the eyes closed. The eyes present optic neuritis with atrophy, the arteries being very small and the right eye less affected than the left, with, however, black pigment in the center of the macula lutea. The headache, vertigo, vomiting, unilateral paralysis and atrophy of the optic nerves pointed to a neoplasm within the cranial cavity; the epileptic and epileptiform seizures occurring without loss of consciousness, pointed to a cortical seat for the growth; it was evident that the motor centers about the sulcus of Rolando of the right side must be the seat and from the fact that the face, arm and leg centers apparently were affected, the middle portion was supposed with certainty to be involved; it having been found that the seat of sensation exists in the parietal lobes of the brain, the anæsthesia of the left half of the face indicated that the neoplasm was located in the middle of the gyrus postcentralis. Syphilis being excluded by history and treatment, three buttons of bone were removed with the trephine, and under the dura mater was found a glioma, which protruded about one half inch and was removed in part, it being difficult to separate it entirely from the healthy brain tissue. The symptoms were slightly ameliorated by the operation, but the patient grew worse, and seven days later died. The author attributes the unfavorable result to the fact that the soft glioma was continuous with the adjoining brain tissue so that its complete separation was impossible without the destruction of a large portion of the cerebrum. Had it been a hard tumor that could have been readily isolated, it is very probable that the patient would have recovered.—*Pacific Med. and Surg. Jour.* 1886. April.

VI. Enucleation with Transplantation and Reimplantation of Eyes. By C. H. MAY, M.D., (New York). After a running history of the operation as applied to the human being, showing four out of five cases to have been failures, the writer proceeds to give a detailed account of twenty-four experimental operations upon rabbits, from which he concludes that the operation is a perfectly feasible one, all those cases in which a bandage could be kept on throughout the treatment, being successful as to size, conformity and tension, the cornea remaining hazy, however.—*N. Y. Med. Rec.* 1886. May 29.

JAMES E. PILCHER, (U. S. Army).

VII. On the Final Results of the Operation for Cancer of the Lip. By Dr. A. WOERNER (Tübingen). In the Tübingen Surgical Clinic no less than 277 operations for labial cancers have been performed, of all of which the author has been able to obtain recent histories. This subject-matter he makes use of for statistical considerations in the present paper. The total number of cases of labial cancer admitted to the hospital amounted to 305, but 28 of these were inoperable.

The entire number of cases is condensed in tabular form, and occupies fifty-three pages—more than half of the number covered by the entire article.

Several smaller tabular synopses representing different statistical points of interest are distributed throughout the paper, and charts bear witness of the diligence with which the statistics have been compiled.

A few of the figures given may be mentioned here.

Ninety and $\frac{15}{100}$ % of the number effected were males. The most frequent age was between 65 and 70. Ninety per cent. were exposed to injuries and the inclemencies of the weather. Of 69 men 51 were mentioned as smokers, 18 as non-smokers. Injuries were believed to cause the malady in 11 cases.

Of the 305 cases, 289 cancers were situated on the under-lip, and only 16, or 5.2 % on the upper one.

The operation generally consisted in cuneiform excision of the tumor (224 cases). Plastic operations were performed sixty-nine times.

Of the 277 cases operated upon in the clinic 111 individuals were attacked by recurrences of the disease, and some repeatedly. These recurrences generally took place within the first year.

As regards the results of the operation, the mortality amounted to 5.77 per cent. Only three of these cases, however, belong to the antiseptic period. Most of the deaths were due to advanced age and severe surgical operations, such as the removal of the maxilla.

The average length of time that the patients continued to live after recovery was 8.4 years; six patients lived to be over 80.

Taking three years as an ample period for recurrences to develop,

106 cases were completely cured, or 57.7 per cent. of the whole number.

The author finally adds statistics obtained from the entire number of operated labial cancers heretofore published, which is 866.

The results of this comparison are very similar to those obtained from the Tübingen Clinic.—*Beiträge zur Klin. Chir. Mitth. aus der chir. Klinik zu Tübingen.* II. Bd. I. Heft. V.

VIII. On Intracapsular Extirpation of Thyroid Cysts.

By Dr. EUGEN MUELLER (Tübingen). The author publishes eight cases in which Prof. Bruns, of Tübingen, enucleated thyroid cystic tumors, this method of operation being preferred since the introduction of the antiseptic method to injection of tincture of iodine, and to incision of the cyst.

The operation consists in incising the capsule of the gland and then dissecting out the cystic tumor with its sac entire, by means of blunt instruments, and without injuring the sac. This operation can be performed in fifteen minutes, and frequently no vessels except those divided by the first incision have to be ligated.

The author compares this operation with the older ones of injection and incision, and points out its advantages; it is the least dangerous most certain, and quickest method of treating cysts of the thyroid. The credit of having recommended it is given to Julliard.

The operation is next described in detail, and a review of the results hitherto achieved by means of the enucleation method by Julliard, Buckhardt, Wolff and Bruns, given.

In the thirty-three cases considered the tumors varied in size from that of a pigeon's egg to a child's head. The wounds healed mostly by first intention, without any outward occurrence, and, on the average, in thirteen days.—*Beiträge zur Klin. Chir. Mitth. aus der chir. Klinik zu Tübingen.* II. Bd. I. Heft. III.

W. W. VAN ARSDALE (New York).

CHEST AND ABDOMEN.

I. Foreign Body in the Œsophagus. By A. G. GERSTER, M. D., (New York). A child, 12 months old, presented no history of

having swallowed any foreign body but suffered from increasing difficult respiration, with occasional aggravated paroxysms of dyspnoea, chiefly expiratory—there being but little difficulty in inspiration—of six months duration. An exploratory tracheotomy failed to improve the respiration, and on exploration with a soft rubber catheter, the trachea and the bronchi seemed to be clear. It was observed that the introduction of a canula into the trachea increased the difficulty of respiration, but the breathing became easier when the mouth of the canula was occluded by the finger. Further exploration was postponed, but the next day pneumonia set in, terminating fatally in three days. On autopsy, a triangular defect of the trachea was found a little lower than midway between the cricoid cartilage and the bifurcation of the trachea, with a corresponding defect about 1 centimeter in diameter in the œsophagus. Through these openings, a flat brass button, a centimeter and a half in diameter, projected into the trachea about 3 millimeters; the foreign body was embedded in the tissues between the trachea and the œsophagus, being held in position exactly like a picture by its frame. The ulceration had evidently terminated by complete cicatrization, no active inflammation being found at the time of death, although the tissues were considerably thickened by the former inflammatory processes. The slowly progressive character of dysphagia was due to the advancing cicatricial contraction of the parts. The difficult expiration, as contrasted with the comparatively easy inspiration, was due to the slanting position of the foreign body, giving it the action of a valve; the stream of air rushing up from below had the effect of raising up the projecting edge of the button and thus rendering it more transverse to the axis of the trachea. Although the use of a metallic probe instead of a soft catheter, in exploring the trachea would have detected the foreign body, it could not have been extracted from the œsophagus, on account of the rim of thickened tissue which held it, and he doubted whether instant death from suffocation would not have been produced by an attempt at removal through the trachea.—*Proceedings N. Y. Surg. Soc.* 1886. April 26.

JAMES E. PILCHER (U. S. Army).

II. Primary Cancer of Lung.—Extension to the Vertebral Column.—Paraplegia. By M. P. MUSELIER. The patient in this rare case was a woman, æt. 75, admitted into L'Hôpital Necker Aug. 4, 1885.

For eight months she suffered intense pains, apparently neuralgic, in the right arm and shoulder, for which various medical men had prescribed various remedies in vain.

About eight days before she came under the care of M. Muselier she had herself discovered a small swelling in the posterior triangle of the neck. This was apparently glandular and close to the brachial plexus.

A similar, but smaller, tumor existed on the other side. Slight pains were occasionally felt in the shoulder of that (the left) side.

Eight days before entering hospital, she had coughed up an expectoration which she herself compared to red-currant jelly.

Auscultation revealed a zone in the middle of the right chest posteriorly, where the respiratory murmur was obscure.

One week after admission pains were felt in the left arm and shoulder almost as severe as those in the right. The same night complete paralysis, both motor and sensory, attacked the lower extremities. Anæsthesia reached as high as the second and fourth ribs. Both patellar reflexes soon disappeared, and, within twenty-four hours of the paralytic attack, a large sacral bed-sore formed. Three days afterwards she died.

Autopsy. Cancerous nodules in the upper and posterior part of the right lung; their size from that of a nut to that of an egg; their number, five or six. Lung substance around, intensely congested.

No nodules in the left lung. Most careful examination of the other viscera revealed nothing.

Spinal cord, etc. At the level of the junction of the seventh cervical vertebra with the first dorsal, slight adhesion of the dura mater to the intervertebral cartilage. This cartilage projected slightly into the medullary canal. The neighboring vertebræ are easily cut with the knife. Spinal cord hardened at the level of the cervical enlargement. One of the adjacent vertebral bodies was infiltrated with cancer. The supraclavicular tumors were apparently cancerous, and, on the right side,

the nerves of the brachial plexus were in immediate contact with the tumor.

The author is of opinion that the cancerous gland on the right side excited the pains in the arm, that the paraplegia and bed-sore were due to pressure of the cancerous nodule developed in the vertebral body acting suddenly on a spinal cord not prepared for it.

[These views seem a little doubtful. Great pain followed by paraplegia is usual when cancer attacks the vertebral column, whether the affected nerves are pressed on by glands or not. In this case, too, the right gland which was supposed to be pressing on the nerves, exercised no pressure on the neighboring vessels. There was no œdema of the arm, and the pulses were equal. It is to be remembered that the pains had existed eight or nine months. Moreover the left arm and shoulder at last became affected like the right, and this was followed *immediately* by the paraplegia. It will scarcely be disputed, therefore, that that pain was of spinal origin and due directly to the spinal cancer. If the left why not also the right? The situation of the cancerous vertebra was also exactly in correspondence with the origin of the painful nerves. *Rep.*—*Gaz. Med. de Paris.* 1886. April 3.

C. B. KEETLEY (London).

III. On the Operative Treatment of Echinococcus of the Lungs. By Dr. J. ISRAEL (Berlin). Operative treatment for echinococcus of the lungs has been rarely undertaken. The difficulty in making a diagnosis, the spontaneous recovery by expectoration oftentimes observed, and finally the dread of opening a healthy pleural cavity and causing pneumothorax; have been the chief reasons for this therapeutic idleness. The author is in favor of more active therapeutic measures, as so many cases, left to themselves, perish in consequence of perforation into the bronchi. A case of echinococcus of the convexity of the liver was reported by the author in 1879, which he had successfully removed by opening the pleural cavity and dividing the diaphragm. This and similar experiences have shown him that opening the pleural cavity for a short period and closing it under strict antiseptic precautions, is not necessarily followed by serious results. The entrance of air, of course, should be restricted as much as possible. Author gives

two methods of operating. The one consists in extended resection of the ribs and incision of the cyst, after uniting the lung to the costal pleura by sutures. This method would be indicated in such cases where positive pressure exists in the cavity of the thorax, as is the case where large echinococcus-sacs lie directly against the chest wall. Under such conditions the pleura may be incised without fear of the entrance of air, the tense cyst pressing closely into the wound. When the cyst is not large and tense enough to change the normal intrathoracic negative pressure into a positive one, then the second operative method would be indicated. This is as follows: Above and below the proposed line of incision hooks are passed through the costal pleura which has been exposed by resection of the ribs. The pleura is then incised at intervals and only during expiration, pieces of iodoform gauze being pressed into the cut, following the knife step by step, thus effectually closing the wound before the next inspiration takes place. When the incision is finished in its entire length, the gauze is pressed into the pleural opening as the edges are separated. The cyst is not incised until three days later, when the lung and chest wall have become adherent. Author reports the following interesting case: Patient, woman *æ*t. 25. For past eight weeks pains in chest, and since two months difficulty in breathing accompanied by cough with occasional bloody sputum. There is a considerable bulging in the lower part of the right side of thorax, beginning at the third rib, and over which there is absolute dulness on percussion. No respiratory murmur or vocal fremitus. Above second rib conditions normal. During deep inspiration the lower boundary of the lung sound reached to the fourth rib, which fact dispelled all idea of the presence of a pleuritic exudation. It was decided that the presence of a tumor in the lung (as shown by the bloody sputum) caused the bulging mentioned above. Aspiration with Pravaz' syringe drew off the characteristic echinococcus liquid, also particles of compressed lung-tissue. This procedure was followed by violent coughing, which resulted in the expectoration of some 1500 ccm. of thin, frothy fluid, evidently coming from the echinococcus sac. Patient became worse, her temperature reaching 40.3°. Aspiration of the echinococcus fluid caused diffuse bronchitis of the left side, and pleuritic pains set in on the right side, in consequence of

which the dyspnoea became alarming. Operation two days later. Resection of 6 ctm. of the seventh and eighth ribs. On incising the cyst there escaped a very large parent-vesicle and several smaller ones with a quantity of aqueous transparent fluid. The lower pole of the sac was adherent to the diaphragm. The lung tissue composing sac-wall was $\frac{3}{4}$ ctm. in thickness at the place of incision. Contra-incision for drainage behind and below. Two drainage tubes, 16 ctm. long, introduced into the lung cavity. Wound disinfected with salicylated water and dressed with iodoform gauze. The further progress of the patient was complicated by a very severe attack of broncho-pneumonia of the left lung, doubtless caused by the aspiration of the echinococcus-fluid. Dyspnoea very great and increased by the pneumothorax of the right side. Venesection gave much relief. Patient made then a rapid recovery, a fistula, however, remaining. The latter is now closed. This case would demonstrate that the risk of a radical operation is really small compared to the dangerous consequences of an exploratory puncture. It was undoubtedly this latter that led to the bursting of the cyst into the bronchi and the dangerous state of the patient subsequently. In a similar case of Schede and also in one of Cornil and Gibier death from suffocation was caused in this manner. Puncture should only be undertaken when the reflex irritability has been allayed by morphine injections or chloroform-narcosis. Author recommends the latter, particularly if one is in the position to undertake the radical operation at once.—*Deutsch. Med. Woch.*, No. 19. May 13. 1886.

C. J. COLLES (New York.)

IV. Resection of Rib for Calcareous Concretion of Pleura. By Dr. A. BONI (Pavia). The patient, a person æt. 60, had received a blow some time previously. This had been followed by pleuro-pneumonia, and a pulmonary cavity developed. Through a fistulous sinus something simulating carious bone could be made out. The patient becoming more and more debilitated, he removed 5 ctm. from the fifth and sixth ribs at about the mammary line on the left side, together with a fragile concretion.

Cleansing with disinfectant drainage; iodoform. Complete restoration of general health. The remaining fistula shows a tendency to

cicatrize.—*Gazst. d. Ospitali.* 1885. No. 38. (Report of Medico-Chirg. Socty. of Pavia.

V. On Gallstone Ileus. By P. J. WISING. The author is able, from an observation of his own and fifty others which he has collected, to give a detailed account of a trouble which has received less consideration than it seems to deserve. Amongst 1,541 cases of ileus collected by Leichtenstern 41 were of this form :

As a rule, ileus is only caused by an exceedingly large stone ; a smaller one could only cause incarceration where there was previous contraction of the gut, or where it had become enlarged by deposition of faecal matter. Incarceration of gallstone in the vermiform appendix, relatively not so very rare, is not included by the author.

Gallstones passing the natural way through the choledochic duct, usually not over 1 ctm. in diameter, do not, as a rule, play any part in obstructing the gut. Obturating stones usually pass through a fistula ; this may be caused by the stone inducing an ulceration of the bladder-wall, local adhesive peritonitis and finally a perforating ulceration of the intestine, or the communication may result from a local cancer. The opening may be into the stomach, colon or duodenum ; that into the stomach is rarest, though Cruveilheir found a stone thus in transit, and in other cases large stones have been vomited up. Small stones, after taking the natural way into the duodenum, may doubtless be forced into the stomach by efforts at vomiting. A stone passed directly into the stomach has never been known to enter the intestine and cause ileus.

Rarely, through more frequently than into the stomach, the stone finds its way into the colon. In the nine such cases—Murchison six were occasioned by cancer, and in three of these there was also a communication between gall-bladder and duodenum. As a rule, no incarcerative symptoms arise in the colon, at most the stone stops above the anus and makes trouble in discharging. The usual way for stones too large for the gall duct, is by a fistula to the duodenum. Murchison gathered 34 such cases, mostly fatal. Yet recovery is not impossible. Amongst W's 51 cases, in 24 of which the condition of the gall-bladder is specified, the perforation was into the intestine in 18. In only 3 of

the 24 does a large stone appear to have traversed the choledochic duct.

The point of occlusion varies in different individuals according to the size of the stone and the width of the intestine. Even in the duodenum the stone may cause a complete closure and be mistaken for pyloric stenosis—as has really happened. Commonly, however, the occlusion takes place farther down in the jejunum or ileum. The author found, in opposition to the statements of Frerichs that gallstones usually lodge in the jejunum, and of Leichtenstern that they most frequently lodge in the lower part of the ileum, amongst 33 cases the obturation twelve times in the jejunum and twenty-one in the ileum, in the latter, twice in the middle, six times in the upper, twelve times in the lower half. However, recoveries are not included, and in them probably the cæcal valve was the point of obturation. The gut is, as a rule, greatly distended above the lodgment, collapsed below. It may be more or less altered at the spot of closure, even gangrenous. Above this it is sometimes hyperæmic and ulcerated superficially or deeply. A few times circumscribed or more general peritonitis was present.

As to clinical symptoms—disregarding the rare cases where the stone traverses the duct causing gallstone colic and icterus, or where at times in traversing the duodenum it compresses the divertic. vateri—the perforation of the stone from the gall-bladder into the gut is far from always accompanied by severe suffering. Only in a third of the cases does severe pain in the hepatic region with vomiting appear to have been present.

Sometimes no illness preceded the ileus; in other cases only digestive disturbances, obstipation and pain in the liver region are mentioned. Icterus certainly does not belong to the regular accompaniments of the perforation; it is specified only eight times in the 51 cases. After the stone has entered the intestine ileus very soon sets in; but it presents no characteristics to distinguish it from ileus from other causes. All trouble disappears on the stone entering the colon. In solitary cases the stone distends the gut-wall to a diverticulum where it may be carried a long time without any difficulty.

As regards separate symptoms, the pain may be very unequal, now

more disseminated or again more localized. The character of the vomited material and the presence of meteorism depend upon the seat of the stone; when this is low down, fæcal vomiting does not appear until late.

In only 5 of the 51 cases could a tumor be felt.

The following matters deserve consideration in making the diagnosis. (1) The sex of the patient. Of the 44 where this is stated, 11 were males and 33 females. (2) The age. One was 27 years, while 36 were 40 years old, and most of them over 50. (3) Preceding aberrations in health. Since the stone does not usually traverse the natural way, jaundice and colic are only valuable as indicating the formation of stone. On the other hand, previous more or less definite symptoms of circumscribed peritonitis in the gall-bladder region are to be heeded, at the same remembering that subjective symptoms of the passage of the stone may be wanting. (4) The attack of ileus may afford some help. Vomiting usually begins early, even when the stone is in the ileum. The sides of the abdomen are generally less distended. Under narcosis the stone may possibly be felt where the abdominal walls are thin; in the author's case the parietes were too thick for this. If it is suspected that a discoverable tumor is caused by a gallstone it would be proper to introduce a fine needle before laparotomy.

Regarding prognosis, 38 of the 51 died; but presumably more fatal cases and especially those of autopsy would be published. All danger is in most cases past as soon as the stone is discharged by the natural outlet; still in some cases alterations in the gut—e. g. ulceration and cicatricial stricture—may have been induced, which later leads to wasting or death. Of 25 fatal cases 14 ended between the sixth and eight days, one from acute peritonitis in the first 24 hours, and one after three days, laparotomy having been performed. In 9, 13, 15, 26, and 28 days respectively, a death occurred, whilst one followed perforative peritonitis at the end of two months.

Individual cases presenting themselves, usually as intestinal occlusion of uncertain causation, have sometimes been treated at first with purgatives, to which any favorable result would then be attributed. The usual treatment for ileus—high injections, opiates, etc.—has been repeatedly adopted, for the most part unsuccessfully. In one

case the stone was passed after massage of the belly, and in two after thorough palpation in examining. All four cases in which laparotomy was done—between third and seventh day—proved fatal. In one of these the stone could not be found; in the other three it was readily felt, the gut was opened and, after removal of the stone, was sewed up. Death resulted in 8 hours, 24 hours and six days respectively. A purgative is advised at the beginning, but should not be continued. Kussmaull's stomach washing he thinks will prove useful. High injections are to be tried since they are harmless, irritative clysters are to be avoided, however. Nutritive enemata may preserve the patient's strength.

Laparotomy is certainly justifiable but should not be done too early.

W's. case was that of a woman of 75 years. She suffered from obstipation and occasional abdominal colic, late in the summer. September 5th the bowels would not move. This complete obstruction was followed in a few days by severe vomiting that soon took on a feculent character; abdomen a little sensitive, but slightly distended. No tumor could be made out either through the anterior walls or per rectum. Slight icterus on the 10th. Morphine, croton oil and high injections did not clear the obstruction. A council on the 16th decided against any operation. Death on the 19th. An egg-shaped stone, 7 ctm. long by ten around, blocked a loop of the upper half of the ileum just below the navel. Signs of beginning peritonitis. Gall-bladder shrunken, ulcerated and presenting a perforation into the adherent duodenum above the mouth of the choledochic duct. There was also a small opening into the colon adhering to the under surface of the liver.—*Nord. Med. Ark.* Vol. 18, No. 18 (as abstracted in *Centbl. f. Chirg.* 1886. No. 20).

W. BROWNING (Brooklyn).

VI. Cholecystotomy. By C. T. PARKES, D.D. (Chicago). Reports two unsuccessful cases, showing that obstruction of the gall-duct is not always amenable to surgical treatment, and illustrating the difficulties the surgeon has to deal with when the bladder is atrophied, or when it is not in a state of distension. The first occurred in a woman, who had suffered from gall-stones with frequent colic for six years and

whose gall-bladder, flaccid and closely adherent to the under surface of the liver, was found with considerable difficulty. It was finally loosened from its attachment to the liver and brought to view, sutured to the abdominal incision, opened and forty-three calculi removed. The patient endured the anæsthetic badly and never rallied. The second occurred in a greatly emaciated man, and was explorative in character, since no gall-stones had ever been discovered. Close to the locality where the gall-bladder should have rested lay a large cyst, which was too near the vessels to permit of removal. An autopsy the following day showed a much atrophied and empty gall-bladder, with a stone completely obstructing the passage through the duct, and a small abscess immediately by the side of the duct, accounting for the cyst that had been felt.

W. H. CARMALT, M.D. (New Haven, Conn.), reported a case of a robust woman who came to him with a history of operation upon the right kidney in Berlin, claiming a recurrence of the symptoms for which the operation had been performed, and desiring the removal of the viscus; there was a tumor, clearly marked on inspection and palpation, and no history of any biliary trouble; on laparotomy, the tumor was discovered to be a gall-bladder, greatly distended with inspissated mucus and calculi. These were removed, the abdomen was closed and the patient proceeded to rapid convalescence.—*Proceedings Am. Surg. Assn.* 1886. May 8.

VII. Explorative Laparotomy with Consequent Cholecystotomy. By J. C. HUTCHISON, M. D. (Brooklyn, N. Y.). A woman, æt. 40, had been suffering from paroxysms of abdominal pain for twelve years, when a tumor was observed extending from a line on a level with the umbilicus and an inch to the left of it, across to the right lumbar region and downward to within two inches of Poupart's ligament; it was irregularly rounded, fluctuated distinctly, was movable from side to side and painless. Cystic tumor of the ovary was diagnosed and its removal by abdominal section advised. With some doubt, however, resulting from a later examination, as to the correctness of the diagnosis, an incision was made extending two and a half inches downward from an inch below the umbilicus; a trocar drew

from the presenting tumor a pint of laudable pus, containing no cholesterine crystals or other elements to show that it came from the gall-bladder; a biliary calculus was, however, found in the sac, and, on further exploration, another was found, pointed on one side, the point fitting into the orifice of the cystic duct and completely occluding it, which explained the absence of jaundice, clay-colored stools or bile pigment in the urine. The stones were removed, the sac explored and cleansed and the edges of the opening into it stitched to the lips of the abdominal wound; the edges of the peritoneum were closed by a continuous catgut suture and the remainder of the abdominal tissue by interrupted carbolized silk sutures, carried down to the peritoneum but not through it; a glass drainage tube was kept in the gall-bladder for purposes of drainage and irrigation, and the patient passed on to a satisfactory recovery. The writer considers suturing the opening in the gall-bladder to the abdominal walls and establishing a biliary fistula preferable to sewing it up and leaving it in the abdominal cavity, (1) because there is less danger of escape of bile into the peritoneal cavity and (2) if the calculi can not be found at once they may be searched for subsequently or be spontaneously discharged through the fistulous opening; the fistula usually heals in a few weeks.—*Proceedings N. Y. Surg. Soc.* 1886. April 26.

EXTREMITIES.

I. Four Cases of Amputation at the Hip-Joint. By T. A. McGRAW, M.D. (Detroit, Mich.) The first case occurred in 1872 in a man of low physical condition, æt. 48, for a mixed sarcoma, portions of which were myxomatous, of the right thigh, affecting bone and soft parts. The wound healed kindly and the patient was discharged in not more than six weeks. Two operations were performed during the following year for recurrent trouble in the cicatrix, the last one extending up under Poupart's ligament, the acetabulum being gouged out with a chisel. After thirteen years the patient is still living in good health, although with a suspicious tumor of one arm.

The second case was in a boy æt. 10, suffering from a severe burn involving the whole thigh, five months after the injury. The hæmor-

rhage was controlled by pressure on the common iliac with a staff in the rectum; the burn being extensive, but a single flap was obtained from the unburned tissues on the outside of the limb. The patient rallied well, but tetanus developed, and death followed in one week.

The third case was a large round-celled sarcoma involving nearly the whole thigh, originating in the cicatrix of an old gun-shot wound of the knee; the femur was disarticulated through an incision on the outer aspect of the hip, and a long anterior flap formed by transfixion, then a short posterior flap, and the arteries were secured. Hæmorrhage was controlled by means of a long piece of rubber tubing passed around the thigh and the body in such a manner as to cross both the femoral and gluteal arteries; the flaps were seized in the hand the moment they were cut, and the digital compression thus added to that of the tubing. The patient rallied well and was discharged from the hospital three months later, the wound almost healed, but died two months thereafter from a secondary pulmonary disease.

The fourth case, occurring in a man *æt.* 37, was also for round-celled sarcoma of the thigh, hæmorrhage being controlled by a plan similar to that followed in the preceding case. An external cutaneous flap was cut by an incision, beginning a little below Poupart's ligament and just inside of the anterior inferior iliac spine, extending in a curve to a point on the outer aspect of the thigh, six inches below the summit of the trochanter, and thence to a point a little anterior to and above the gluteal fold, an internal skin-flap being cut to correspond. The muscles inserted into and about the trochanters were then divided, the joint exposed, the bone disarticulated and the remaining structures divided by one sweep of the knife. The wound was closed with careful antiseptic precautions, but the patient died sixty hours later apparently of suppression of urine, although there was no uræmic coma.

The writer calls attention to the rapid and extensive involvement of the bone by sarcoma and expresses his belief that a sarcoma, even though small and at the lower end the femur, demands amputation at the hip, believing that this plan would greatly diminish the mortality of the disease. He considers that the dangers of the operation in comparatively healthy subjects may be greatly overrated by the profession. The danger from hæmorrhage is not very great, except in very fat,

heavy and at the same time anæmic subjects, and the bleeding can be readily controlled by the means described. He would, however, insist upon the disarticulation of the femur before any of the larger vessels are divided.—*N. Y. Med. Rec.* 1886. May 22.

J. E. PILCHER (U. S. Army).

GENITO-URINARY ORGANS.

I. On Drainage of the Bladder with Special Reference to a Post-Prostatic Operation. By E. H. HOWLETT, F. R. C. S. This operation is performed in the same manner as Harrison's prostatic puncture, which, indeed, it would become were the prostate hypertrophied.

The patient being in the lithotomy position, the bladder is filled if empty. The forefinger of the left hand is passed into the rectum and kept there, whilst a trocar and canula of the size of a No. 12 catheter (English ?) is thrust through the skin about $\frac{3}{4}$ of an inch in front of the anus and slowly pushed on till resistance is felt to have disappeared. After maintaining the silver canula for some days an india-rubber catheter is substituted.

Two cases are related in which this puncture was practised. In the first, a case of epispadias, for the purpose of keeping some fistulæ free from urine, and in the second, to establish a permanent drain in a case of atony of slight prostatic enlargement.

For chronic cystitis, enlarged prostate, atony, paralytic retention, ruptured urethra, impassable stricture, and malignant disease of the prostate or bladder where continuous drainage of the bladder is indicated, the author recommends the post-prostatic puncture.—*Brit. Med. Jour.* Feb. 13, 1886.

II. A Case where Lithotomy was Twice Performed Within Fourteen Months with Remarks. By REGINALD HARRISON. T. S., æt. 62, with stone in the bladder (multiple) and enlarged prostate was subjected to lateral lithotomy, as Mr. Harrison hoped to improve the prostatic urethra by a section of the gland (vide Harrison "On treatment of certain cases of prostatic obstruction by a section of

the gland." Trans. International Med. Congress Copenhagen. 1884). A bladder drainage tube was inserted after the operation and retained for six weeks. The patient left the hospital shortly afterwards with a fistulous track unhealed. The calculi removed weighed nearly 3iij.

Though the patient returned to work, the bladder never quite recovered itself, the wound did not close and he had frequent attacks of cystitis. On sounding thirteen months after the operation a stone was detected which was removed by lithotomy in the line of the old incision a month subsequently. The operation was easy, access to the bladder being greatly improved, for on this occasion the largest staff could be readily passed. The calculus weighed 3j, and the author concludes was overlooked at the first operation, even in spite of all the precautions which the state of the prostate prompted. The patient rapidly got well, and mention is made of the fact that there was now no prostatic bar nor residual urine.

[Before the first operation the enlarged prostate is said to have impeded the easy introduction of the instruments.]

Mr. Harrison considers, therefore, that this operation has the advantage of supra-pubic lithotomy in cases of prostatic enlargement, for by the latter, although the stone may be removed, the obstructing prostate is left intact.—*Brit. Med. Jour.* Feb. 13, 1886.

III. Remarks on Incontinence of Urine in Children. By WM. H. DAY, M.D. After mentioning the various causes of enuresis the following case in connection with chronic albuminuria is related:

S. M., æt. 9, incontinence both by day and night. At 6 years of age had scarlet fever, followed by dropsy. A year after recovery could only pass urine in drops. After two months urinated every ten minutes without pain. Was sounded for stone on account of pain and the occasional presence of blood in the urine.

On admission urine highly albuminous, with a few casts.

Treatment—Confinement to bed, lying for a part of the day in the prone position. Milk diet, and a mixture of belladonna, iron and nuxvomica.

After six weeks treatment the incontinence had almost entire disappeared, the boy returning home much relieved.

Case II. A girl, æt. 7. Nervous and excitable. Mitral disease. Never had scarlet nor rheumatic fever.

Enuresis every night. Urine pale, copious, 1020, acid, contained phosphates.

Treatment—A solution of argent. nit. ℥ij to 3j was applied to the neck of the bladder, and a mixture of belladonna and iron was given, but with no good effect. Electricity by means of Stoehrer's smallest induction apparatus (interrupted current) with one cell was now used for ten minutes daily, one sponge being placed over the sacrum and the other over the pubes. After five weeks of this treatment she left the hospital cured.

Case III. Y. R., æt. 7. Incontinence for eighteen months. Urine pale and contained a few phosphates, acid.

Treatment—Milk diet, with meat once a day. Faradization daily for ten minutes. A mixture of belladonna and iron. He left the hospital cured after six weeks' treatment, having only wetted his bed five times since admission.

Case IV. A pale and irritable boy, æt. 8. Troubled with enuresis from birth. Passed large quantities of high-colored offensive urine, containing much uric acid. Treatment as in the last case, except that he was ordered strychnine and phosphoric acid on account of the urine, and belladonna was pushed to its physiological effect. The patient was greatly benefited, though not quite cured, after three months' treatment.

Case V. A girl, æt. 9. Suffered with enuresis of a year's duration.

All treatment had failed to relieve her. The use of the battery and the iron and belladonna mixture were prescribed. After six weeks patient was well, but the battery getting out of order enuresis to a slight extent returned.

As an adjunct to the treatment employed in these cases Dr. Day recommends cold sponging in the morning. Indeed, he attributes one cure to this means alone. The cold, or even for delicate children, tepid sponging should be followed by vigorous friction. In this way it braces up the nervous system.—*Brit. Med. Jour.* Feb. 13.

Testicular Affections and Hernia. By M. VERNEUIL. When hydrocele is accompanied by tubercular epididymitis the author recommends the injection of iodine as in the ordinary radical cure for hydrocele for it appears to exercise a beneficial influence on the diseased epididymis. He also points out that hydrocele may be due to the pressure of an epiplocele on the veins of the cord, in which case injection is contraindicated.—*Gazette des Hôpitaux*. March 2, 1886.

V. On Supra-Pubic Lithotomy. The three following contributions on this subject were reported at the Royal Med. Chir. Soc. on March 30, 1886. Cases I and II. By RICHARD BARWELL, F. R. C. S.

Case I. Rose A., æt. 9, subject of vesical calculus of large size. To avoid the risk of a vesico-vaginal fistula supra-pubic lithotomy was performed, the bladder being first distended. The rectal bag was not used. The bladder wall was sutured after extraction of the stone, and the child was well in fortnight. The stone weighed $2\frac{1}{4}$ ounces.

Case II. A man, æt. 60, with a medium sized stone, prostatic enlargement and hæmaturia. The supra-pubic operation was selected not only on account of the condition of the prostate, but also as it was thought that the hæmorrhage might point to a vesical growth.

The rectal bag was again discarded, but the bladder was distended with $\frac{3}{4}$ xvi boro-glyceride solution.

The author concluded his paper by stating that distention of the rectum had a very small effect on the anterior peritoneal fold.

Case III. A case of vesical calculus of unusually large size, removed by supra-pubic cystotomy. By WALTER RIVINGTON, M. S. Man, æt. 61. Calculous symptoms for sixteen years.

February 24, 1885. External urethrotomy for purpose of exploration. A large stone was discovered, which was almost immovable when grasped with forceps. Supra-pubic lithotomy was now performed. The stone was broken up by means of a chisel and mallet and extracted piecemeal.

The wound in the bladder and that in the soft parts were separately

sutured with insertion of a drainage tube and a silver tube was placed in the perineal wound.

On March 21, the patient was allowed up for one hour.

On April 17, the patient was well with the exception of a fistula in perineo.

Three months after the operation the patient succumbed to a renewed attack of cystitis. Suppurative nephritis was found at the autopsy.

The pieces of calculus together weighed 23 ounces avoirdupois.

Although not absolutely the largest calculus removed during life, it appears to be so with recovery of the patient from the immediate effects of the operation.

Case IV. By W. H. A. JACOBSON, M. B., F. R. C. S. A lad, æt. 19, had symptoms of stone for five years. A lithotrite discovered more than one stone.

On January 30, hypogastric lithotomy was performed, the bladder having been injected with 3x of water and the rectal bag introduced. The peritoneum was not seen. One stone only was found at the time of the operation, the other two escaping a fortnight after the operation through the wound.

It is supposed that these were missed, owing to the mistake of keeping the bladder distended with fluid during the search. No sutures, drainage tube nor catheter were employed after removal of the calculus. The patient was well in five weeks, convalescence having been retarded by an attack of pneumonia.

The largest calculus only weighed 300 grs. so that, as the author remarks, all might have been dealt with by lithotrity. Mr. Jacobson concludes his paper with these propositions: 1st. That this operation would be found of great value by those who only had to deal with stone occasionally, more especially if the stones were large and in the adult subject. 2d. That whilst it could never contrast in brilliancy with lateral lithotomy, it would, in its improved form, give better results in adults with stones not suited to lithotrity. 3. That at present it would be wiser not to attempt to close the bladder wound with suture. 4. That in reviewing an abandoned operation these two questions called

for an answer. *a.* Did we stand in a better position towards the operation than our predecessors had done? This question could be answered in the affirmative after the work done by Dr. Garson, Prof. Peterson and Sir Henry Thompson. *b.* On what grounds was the operation abandoned? These the author enumerated.—*Brit. Med. Jour.* April 3, 1886.

F. SWINFORD EDWARDS (London).

VI. A Case of Rupture of the Kidney. By Mr. EALES. A collier was brought up from a coal mine suffering from collapse, the result of a crush of the right side from a fall of coal. He passed some blood with his urine, but after a few hours this stopped. He complained of great pain in the right flank. He died 48 hours after the injury.

A post-mortem revealed the fact that the right kidney was displaced into the iliac fossa and ruptured, whilst there was a large accumulation of blood behind the peritoneum. The question is raised as to whether any operation should have been performed.—*Lancet.* March 13, 1886.

VII. Traumatic Hydronephrosis. By JOHN LOWE, M.D. A case was related in which some blood had been effused from an injured kidney, giving rise to a sac, part of which was formed from the pelvis of the kidney and part from the surrounding tissues.

The discussion which resulted turned principally on the question of treatment by incision, and also on the propriety of such a term as traumatic hydronephrosis, where the sac was undoubtedly not due solely to a dilated kidney pelvis as is the case in ordinary hydronephrosis.—*Lancet.* April 10, 1886. Vol. 1, p. 689.

W. B. CLARKE (London).

ŒSOPHAGOTOMY FOR FOREIGN BODIES LODGED IN THE TUBE.¹

By THOMAS M. MARKOE, M. D.,

OF NEW YORK.

SURGEON TO THE NEW YORK HOSPITAL.

THE following cases, neither of which has been published, form the foundation of the remarks I have to offer to the consideration of the society on the subject of opening the œsophagus for the removal of foreign bodies lodged in the tube :

CASE I.—Harriet Jones, æt. 3, while playing with some iron jacks, such as children now use in place of the old-fashioned jackstones, got one of them into her mouth and swallowed it. The alarm was immediately given by her sister, who was playing with her, and when the mother ran to her she seemed to be choking. The mother put her finger back into the fauces, and distinctly felt the foreign body, but only succeeded in pushing it farther down and out of her reach. A doctor in the neighborhood saw her within a few minutes, and passed a probang, which he thought had gone down to the stomach. He gave the child a powder, which had the effect of making her vomit, and the vomiting continued during the whole night. This occurred on Sunday, April 25, 1875. The next day she seemed sick and prostrated ; would not willingly take food, evidently on account of pain in the act of swallowing. She was able to swallow liquids, but bread, or other solids, would go down for a certain distance, and then be rejected. There was a little cough, no dyspnoea, and no evidence that the child felt any local pain. This continued till Thursday, the 29th, when I first saw her, she in the meantime being constantly up in the mother's arms, very weak, and most of the time with high fever. I examined the fauces with my finger, she being under the influence of ether, but could not reach any foreign body, nor could I discover any swelling or any abnormal condition of the parts within my reach. Careful exploration of the neck externally did not reveal any tumefac-

¹Read before the New York Surgical Society, April 12, 1886.

tion, or any other indication of the presence of the intruder. I then passed into the œsophagus a large leaden probe, which struck a metallic body after it had passed about five inches. I estimated its position to be a little below the cricoid cartilage, but renewed external palpation failed to reveal its presence. I then passed down a pair of long, curved forceps, with which I could easily touch the jack; but, after repeated efforts with instruments of varied form and size. I could not succeed in getting a hold on it. Although as gentle as possible in all our manipulations, a small quantity of bloody mucus showed me that some damage was being done to the mucous membrane, and I desisted after trying a large bougie with which I thought I might push the foreign body down into the stomach. In this, however, I did not succeed, the instrument only passing, as before, about five inches, and being there firmly arrested.

The next day, Friday, the 30th, having provided myself with other appliances, and having asked Dr. George A. Peters, Dr. T. T. Sabine, and Dr. McBurney to assist me, we all met with Dr. Ranney, in whose care the case originally was, and the manipulations of the day before were repeated, and varied in every way without any success in dislodging the piece of iron. It could easily be touched, and several times was fairly seized by the forceps, but they could not be made to keep their hold. Fearing further attempts would only increase local mischief, on consultation we decided to proceed at once to œsophagotomy, for which we had the consent of the parents.

An incision was made about midway between the trachea and the sterno-mastoid muscle, commencing opposite the middle of the thyroid cartilage, and extending to within less than an inch of the top of the sternum. Passing down between the sterno-mastoid and sterno-hyoid muscles, and pushing the omo-hyoid outward, we came down to the level of the carotid sheath, which was also pushed outward, and from this point the dissection was mainly conducted by the handle of the scalpel. Carefully displacing the loose connective tissue, we came down upon the side of the œsophagus, along which could be distinctly seen the inferior laryngeal nerve, at this point giving off a considerable lateral branch to the trachea. This nerve was carefully pushed forward, and it was noticed that every time it was pressed upon by the finger, or the curved spatula, the child showed signs of marked laryngeal distress. One of the pairs of long curved forceps we had been using was then passed down, closed, into the œsophagus, and by it the œsophagus was brought into relief in the wound. A longitudinal incision of about three-quarters of an inch in length was then made, opening into the tube, bringing its cavity very distinctly into view.

Drawing the lips of the œsophageal opening well apart, the position of the foreign body was plainly revealed. An opening had been made, of course, on the left side. Opposite to the opening, therefore, on the right wall of the tube, was seen one limb of the jack projecting into the tube, while the main body of the jack was entirely outside of the tube, which it must therefore have perforated from within outward. How this irregularly shaped body could have traversed the wall of the œsophagus, whether forced through by muscular contraction tending to close the tube upon it, or whether it was pushed through by the sponge probang, or by the repeated handlings of it with the forceps, could not now be ascertained; the fact was plainly visible to all. That it was pushed through by mechanical force, and not by a process of ulceration, seemed evident from its being surrounded and hugged by sound tissues so closely that I had to cut a part of the œsophageal wall in order to get the body back into the tube, and that there was no indication of inflammation, ulceration, or suppuration in the nidus, from which it was removed. By making this incision and thereby releasing one of the buried iron points, the whole was easily rolled out of its bed and removed. It was evident that the body of the jack must have lain outside of the œsophageal tube, and between it and the carotid sheath, upon which it must already have begun to press.

The wound was brought together in its upper three-quarters by fine silk sutures, the lower fourth being left open. Into this open portion of the wound a silk tent was inserted for drainage. No attempt was made to close the wounds of the œsophagus. No vessel had been wounded which required a ligature. The wound was dressed lightly, but, of course, without those antiseptic precautions which were then but imperfectly understood. The parents were directed not to allow the child to swallow anything, and an enema of beef-tea or milk was ordered to be given every three hours. We were informed that from the very first the child had been very averse to swallow anything, and in consequence had grown very thin and feeble.

May 1.—Passed a restless night without sleep. Enemata retained only for about an hour. Ordered three drops of laudanum with each.

May 2.—Great thirst; emaciation very evident; very feeble; wound looks well; no trouble about throat. No swelling of neck.

May 4.—Has been allowed to swallow water freely. It seems to give comfort, though it all comes out of wound, as ascertained by measurement. She swallows easily. Stitches all removed; the wound gaps freely. Enemata are retained longer by the help of the laudanum. She is losing flesh rapidly. No cough, and respiration easy.

May 8.—Seems to be nourished very imperfectly by the enemata, though they are given faithfully. The wound does not granulate: all adhesions have broken up, and it seems to be incapable of reparative action. Some little milk is found, by measurement, to go down to the stomach, but only a trifling quantity. Some bronchitis from constant wetting of the chest. Thirst not so great; very restless and sleepless.

May 10.—Enemata have been given by the long tube and in larger quantity, with a little brandy. She looks a little better, and her pulse is stronger. A patch of erysipelas showed itself on the nose. Ordered the patch to be painted with tinctura ferri chloridi, and to add one grain of quinine to each injection, which are now pretty well retained.

May 11.—Seems brighter, but erysipelas has spread on the forehead. She retains the enemata, but she is poorly nourished. I have abstained from passing a tube through the œsophagus, on account of its very damaged condition. Beside the wound made in opening the tube on the left side, there is another large opening on the right side made for the extrication of the foreign body; and there is also, without doubt, much laceration of the mucous membrane caused by our persistent efforts at seizing it with the forceps. I fear that the passage of an instrument from the mouth might do much mischief and might increase future trouble, should the patient recover. The pulse is much better; no reparative action in the wound.

May 12.—A sudden change took place after my visit yesterday. The child seems now dying of mere inanition, though the enemata are given regularly and are mostly well retained. I immediately introduced a tube into the stomach and threw in four ounces of warm milk-punch. It was too late. The child rallied for a little time, and died about three hours after.

CASE II.—Richard Ghent, aged twenty-four, a painter by trade, was admitted into the New York Hospital January 22, 1886. About five weeks before admission, while eating supper, a plate containing four artificial teeth broke in his mouth, and the palate portion was swallowed. He made attempts immediately to vomit, and tried to dislodge the plate, but did not succeed. He says that several surgeons have made attempts to remove the plate but have not succeeded. The patient is a man in fair condition of health and vigor, and does not seem to have suffered materially from failure of nutrition. This is due to the fact that, though he has not been able to swallow solid food, he has been able to swallow fluids with comparative comfort. He says he can feel distinctly the spot where the foreign body has lodged, and indicates a

point just below the larynx, but says it gives him no pain, nor is there any tenderness to be discovered in the region where he says he feels it. A large No. 12 œsophageal-tube detects an obstruction just below the cricoid cartilage, about eight inches from the teeth; a small one, No. 4, passes easily into the stomach.

January 29.—Attempts were made to remove the plate, and it was found not difficult to seize it with the coin-catcher, but when so seized it was found so immovably fixed that the force that we thought it safe to employ did not change its position in the least. A large stomach-pump tube was then passed down to the foreign body, and an attempt made to force it downward into the stomach, with the same result. From the long time which had elapsed from the time of lodgment, and from the fixedness of the body, I felt quite sure that it had partly ulcerated its way out of the tube, and that therefore any undue force in extraction, would, while it was unavailing, prove disastrous to the œsophagus and to the parts around it. Reasoning thus, we recommended that another attempt should be made under ether, and, if not successful, that œsophagotomy should be performed.

February 9.—The patient was placed fully under the influence of ether, and again the foreign body was seized with the coin-catcher, but the complete relaxation produced by the anæsthetic had not loosened in the slightest degree the grasp of the œsophagus, and the operation was proceeded with. An incision four inches and a half in length was made, extending from the top of the thyroid cartilage nearly to the clavicle, along the inner border of the sterno-mastoid muscle, passing obliquely so that the upper end of the incision was half an inch internal to the edge of the muscle, while the lower end overlapped it nearly as much. The omo-hyoid was divided, and then, passing down between the sterno-mastoid and the sterno-hyoid muscles, and pushing the thyroid body inward, the side of the œsophagus was easily reached by separating the loose areolar textures with the finger and the handle of the scalpel. The recurrent laryngeal nerve was not seen, and no vessel was cut of a size requiring ligature. The œsophagus was now made to bulge into the wound by passing the large stomach-pump tube down to the point of obstruction and then pressing with the fingers deeply on the right side of the trachea. This brought the side of the œsophagus fully into view and enabled us very easily to make a longitudinal incision into it about an inch long, opening the tube just above the point of lodgment and bringing into view the foreign body, which was seen to occupy a position parallel with the axis of the œsophagus and about at a right angle to the median plane of the body. It was seized with a dressing forceps, but was found as immovable as ever. It was

not till the incision was prolonged downward, so as to cut through the œsophageal wall which embraced the plate so firmly, that it could be stirred from its bed. It was then easily removed. It would naturally be expected that such firm impaction during so long a period would have been accompanied by some ulceration of the surfaces against which the foreign body had so long been pressing. A careful inspection with a good light enabled us to feel pretty sure that very slight abrasion of the surface had taken place, and that the reason why the plate was so firmly held was that the tube had contracted so firmly above the point of distension as to resist all our efforts at dislodgement. A soft-rubber tube was now introduced through the wound, and passed into the stomach, and left *in situ*. Careful antiseptic dressings were applied, from which the tube, which had a funnel-shaped extremity, was allowed to project. It was extremely easy to pass fluids through this tube into the stomach, usually by merely pouring them slowly into the funnel, though occasionally it was necessary to force them through with the stomach-pump.

There was very little inflammatory reaction after the operation. The temperature scarcely rose above 100° , and the wound behaved in a most satisfactory manner. The tube gave no pain or uneasiness, and afforded the most comfortable possible means of alimentation. His general condition was well maintained, and his nutrition perfect. On the 19th, as the wound was granulating finely, and looking perfectly healthy and ready to heal, the tube was removed. Before it was taken out, however, a similar tube was introduced into the left nostril, and, as the first tube was removed, the second was slipped by the wound into the stomach. This again proved an easy and comfortable way of feeding, the tube through the nose giving rise only to a little soreness in the meatus through which it passed, but not enough to call for treatment. This second tube was used with a view of preventing any matters getting out of the œsophageal wound in the act of deglutition into the yet unhealed fistulous track left by the removal of the original tube. It seemed to answer its purpose perfectly, the wound closing promptly and healing so well that on the 26th the nasal tube was removed, and the patient was allowed to swallow soft food without restriction. No further interruption to the healing occurred, and the patient was well by the 15th of March.

The operation of œsophagotomy for the removal of impacted foreign bodies is now one of universal acceptance. As a legitimate surgical resource, however, it was slow in achieving this position, and was received with much distrust and hesita-

tion till within a comparatively recent period. Mr. Arnott, surgeon of the Middlesex Hospital, writing in 1833, says: "Incision of the œsophagus for the removal of a foreign body is an operation which has rarely been performed. It is stated to have been twice executed in France about a century ago, and once again lately, but I can find no record of its having been done in England." Since the occasions for its performance must have been quite as frequent in former times as they are at present, it is not quite easy to explain the timidity of good and otherwise bold surgeons in regard to this operation. It seems likely that the depth of incision in the neck necessary to reach the œsophagus, and the important organs among which that incision must pass, deterred surgeons from attempting œsophagotomy in cases when we should now consider it clearly indicated. Perhaps also the facts that the occasions for its performance were so rare that no one surgeon could ever hope to acquire a large experience in it is a good reason why but few had the courage to resort to it. That this is true is seen by statistical tables which show that out of eighty-two cases, which have been collected up to date, only five men have had more than two cases: and, of these five, only two had an experience embracing five cases. But probably the most potent reason for not doing œsophagotomy was found in the illusive hope that the foreign body would be spontaneously dislodged. This hope has been, I feel quite sure, encouraged by the frequency with which foreign bodies have been spontaneously expelled from the air-passages after a lodgment of months and even years. Increasing experience has shown that the physical and vital conditions are not the same in the two sets of cases. In the air-passages we have an open tube, a column of air to act upon the foreign body, and all the power of the numerous and strong muscles engaged in the effort of forced expiration. If it were not for the spasmodic resistance of the glottis, every foreign body, not too firmly fixed by size or shape, would be easily expelled through the larynx. No such provision exists in the œsophagus, and, if the intruder can not be dislodged by forceps or probang, and can not be pushed into the stomach, there seem to be hardly any means, and, therefore, little hope of spontaneous expulsion

The consequences of such undisturbed lodgment are now understood to be disastrous in every case, and fatal in a frightfully large proportion. These consequences are familiar to us all, and are yearly illustrated by fatal cases published in the journals. One of these was related by Dr. W. T. Bull, at a recent meeting of the society, in which a horse-chestnut, lodging near the cardiac extremity of the pylorus, had produced a perforation of the pleura, which was filled with a mixture of various ingesta in a state of decomposition, the lung itself being collapsed. Mr. Bryant quotes several cases, one in which a fish-bone caused death by perforation of the heart, another in which the aorta was eroded by a sharp spiculum of bone, and another in which fatal inflammation of the spinal cord was produced as a consequence of ulceration of the intervertebral substance following the arrest of a piece of bone in the œsophagus. Mr. Bryant also alludes to two cases reported by Mr. Erichsen, in one of which a piece of gutta-percha formed for itself a bed in the wall of the œsophagus for upward of six months, and destroyed life by ulceration into a large vessel, and consequent hæmorrhage; and a second in which a fatal result was brought about by a half-crown ulcerating its way into the aorta. One very interesting case occurred to Mr. Bennett May, showing how, even at a period quite long after the original impaction, dangerous results may be apprehended. It occurred in a child 7 years old, from whom he removed, by œsophagotomy, a half-penny which had been swallowed three years and a half before. It had ulcerated through the œsophagus and opened the right bronchus, and was lying partly in the bronchus and partly in the œsophagus. Mr. May had the good fortune to save his patient by his operation. Many other fatal results of œsophageal impaction might be cited, but, from the cursory glance I have been able to take of the literature of the subject, I feel quite sure that it would be difficult to find, among all the recorded cases, as many of spontaneous recovery as I have here given as having a fatal issue.

These considerations explain, at least in part, the slow progress of this operation in public favor, and at the same time they point out the indications for its performance. Thus it may be stated that where a foreign body has lodged in the

œsophagus, and cannot be removed by forceps or snare from the mouth, and can not be pushed into the stomach, it should be removed by œsophagotomy, provided it has lodged at a point accessible to the surgeon's knife, and that the operation should not be delayed in the hope of spontaneous expulsion. Of course, before proceeding to so serious an operation, the diagnosis should be certain, and this usually presents no difficulty. The history of the accident, the sensations of the patient, the behavior in regard to swallowing, and, above all, the positive evidence afforded by the bougie, usually leave no doubt in the mind of the surgeon both as to the fact of impaction and of the precise spot at which it has occurred. It should be noted here that external palpation rarely gives any assistance in ascertaining the presence of a foreign body lodged in the œsophagus. The tube lies so deep behind the trachea and below all the muscles of the neck, that the hardest and most irregular substances lodged in it can very rarely be appreciated by external examination. Of the operation itself, nothing needs to be said to this society. The plan of it is simple and the execution easy, requiring only delicacy and carefulness in its performance. It should be done on the left side, as the œsophagus inclines to that side, and it should be commenced by a very liberal incision of from four to five inches in length, in order to give a chance to conduct the deeper manipulations, as far as possible, by the sense of sight.

It is more particularly to the management of the case after operation that I wish to direct the attention of the society. Various plans have been suggested by various operators as to the two prime points which present themselves to the surgeon after he has completed his operation. First, the healing of the wound with the least risk of wound complications; and, second, nutrition of the patient, not merely with the view of sustaining life, but also of maintaining reparative power at a point at which it will prove itself capable of healing a large, deep and difficult wound. I feel that it was a failure on my part to appreciate the importance of this latter point which caused the unfortunate result in my first case, and I determined, should another case be placed in my hands, that malnutrition should not cause its failure if it could be prevented. Of course, it is

understood that swallowing of food in the usual way can not be permitted, for the obvious reason that such swallowing would prevent the healing of the wounded gullet, would allow the escape of food in a more or less septic condition into the cavity of the wound outside, and thus inflammatory complications of the most serious nature would almost necessarily supervene. To maintain the nutrition of the patient, then, either food must be transmitted to the stomach by tubes past the wounded point of the œsophagus, or else reliance must be had on rectal alimentation. Rectal alimentation, however, affords us only a limited resource in nutrition. Though it may serve us well during temporary interruption of gastric digestion from any cause, yet life can not long be sustained by it, and, when sustained, the nutritive conditions can rarely be kept up to the high reparative point necessary for the healing of a large operation wound. This view of the limitation of rectal alimentation has been growing stronger in my mind ever since my attention was called to the subject by the conspicuous failure to secure proper nutrition in the first case I have narrated; and I believe that, if I had fully appreciated just how little reliance was to be placed on it, my little patient might have been alive and well at this moment. It is true that in this case the conditions were unfavorable for the passage of a tube through either the mouth or the wound. The extensively damaged œsophagus made it highly proper to avoid any further injury, if it could in any way be avoided, and this must be the explanation, if not the justification, of the course pursued. But had I at that time the same convictions I now entertain with reference to rectal alimentation, I should at all hazards have passed a tube through either the mouth or the wound, and thus have secured that full reparative nutrition without which, in my case, all repair broke up at the wound, erysipelas set in, and the patient sunk so rapidly that, when a tube was introduced and plentiful nourishment was supplied, it came too late to save the life which I had been for so many days blindly trusting to a most unreliable supporter.

The management of the second case seems to me to present a much better prospect of success. Determined to secure gastric alimentation, the choice of means lay between introducing

a tube through the mouth or wound whenever it was necessary to give nourishment, or leaving a tube, passed through the mouth or wound, constantly *in situ*, thus permitting nourishment being given whenever desired. I chose to leave the tube in the wound for several reasons. First, I thought that the tube would insure the drainage from the bottom of the deep wound; secondly, that it would tend to prevent the entrance of any matters regurgitated from the stomach; and, lastly, I was confident that the tube through wound would be much less distressing to the patient than a similar tube passed through the mouth or the nostril. I entirely rejected the idea of the frequent introduction of the tube, because I felt convinced that such a procedure would not only seriously disturb the healing process, but would be such a dread and a trial to the patient, and such a tax on the surgeon, that the result would be that the tube would be introduced as rarely as possible, and, when introduced, the stomach would be distended with as much food as it would hold, in order to prevent the necessity of early repetition of the troublesome procedure—a condition of the stomach by no means conducive to comfort or to good digestion. In all these respects the case answered my best expectations. The tube in the wound coming out through the dressing was always available for use, and small quantities of nourishing fluid were constantly supplied by the hands of the nurse without pain and without trouble, and without any overtaxing or distressing of the digestion; and regurgitation, which rarely occurred, took place through the tube, without at any time appearing around or through the dressings. The wound was perfectly drained, and granulated healthfully from the beginning. The change to the nasal tube was made at the end of ten days, and this latter was kept in place for a week to allow the wound to fill up solidly with granulations. The healing of the wound from this time was rapid and complete. The man is not now conscious of any impediment to the act of swallowing.

The results of the operation of œsophagotomy are encouraging. I am indebted to my friend, Dr. S. W. Gross, of Philadelphia for the following statement, which he very kindly gleaned for me from his abundant statistical resources: The

whole number of persons operated upon up to date is 82. Of these cases 63 were successful, and 19 followed by death. Of the 82 cases the foreign body was found and removed in 74, and of these 57 recovered and 17 died. The foreign body was not found in 7 cases, and in one case it was found but slipped into the stomach, and passed *per anum*. In one of Billé's cases the foreign body slipped into the stomach, and was thence removed by gastrotomy, the patient dying of peritonitis. In this case, of course, the fatal result should not be credited to the œsophageal operation. Of the 16 fatal cases of œsophagotomy 8 are stated to have died of abscess, provoked by the lodgment of the foreign body, 2 died of exhaustion, 2 of septicæmia, one of pneumonia, and the rest not clearly stated. It would be interesting to know the relation of the death-rate to the time at which operation was performed after the impaction. I feel certain that delay would be accountable for a very greatly increased death-rate. In this connection it may be well to call attention to the evil effects of delay, even in those cases where the foreign body can be dislodged without œsophagotomy. In these cases two causes contribute to make delay disastrous. First, the tendency of the foreign body, particularly if it is hard and rough, to make its way out of the tube by ulceration, as illustrated by the first case here reported, and, secondly, by the contraction of the circular fibres of the œsophagus round the intruder, as described in the second case. Both these causes are cumulative in their action, and delay, therefore, must be constantly rendering both of them more and more efficient for mischief. A good plate which to-day can be removed with comparative ease has by to-morrow so buried its sharp points in the mucous membrane, or is so firmly grasped by muscular contraction, that œsophagotomy has become the only resource; and the horse-chestnut, as in Dr. Bull's case, which, on the day on which it was swallowed, might easily have been pushed into the stomach, gave infinite trouble when attempts were made several days after to dislodge it, and finally caused the death of the patient.

From these considerations I would deduce the surgical rule: To attempt the removal of foreign bodies impacted in the œsophagus as soon as proper instruments can be procured,

and, failing after a fair and sufficient trial, to proceed at once to the operation of œsophagotomy.

DISCUSSION.

DR. ROBERT ABBE thought an attempt should always be made with considerable hope of dislodging the foreign body under ether. The past winter he saw a woman twelve days after she had swallowed a plate with one tooth which had lodged two inches below the cricoid. A great many attempts had been made for a week by two or three surgeons to remove it, but without success. Dr. Abbe was able to get the coin-catcher behind the foreign body, but, with all the force which he dared exert, he failed to dislodge it. The patient was then put under the influence of ether, which so relaxed the œsophageal structures that, with less force than he had previously exerted, he was enabled to remove the plate. It seemed to him, also, that the œsophageal wound might safely be closed and the tube be introduced, protruding from the mouth, from the first. This fact was demonstrated in some cases recently reported in English journals, in which the patient tolerated the tube for a number of days with comparative comfort.

DR. MARKOE said he had not seen the reports referred to by Dr. Abbe, but he knew of cases in which that practice had been adopted, and the objection to it was that the tube caused a great deal of faucial irritation, and it was abandoned. But in his own case the tube, being introduced through the wound, gave such comfort that he would not think of trying any other method.

DR. A. G. GERSTER wished to add his testimony to the advantages of the continuous use of the elastic tube for the purpose of alimertation as illustrated in three cases. Two were cases of partial extirpation of the larynx, in one of which the tube was left in for twelve days, and in the other for fourteen days. In one the tube projected through the wound made by removing one half of the larynx, and was borne so well, and enabled alimertation to be carried to such an extent that the patient increased very rapidly in weight. In the third case, in which the entire tongue and floor of the mouth down to the epiglottis and middle portion of the inferior maxilla were removed, and deglutition was out of the question, the tube was still in (the sixteenth day after the operation), and alimertation was kept up with a great deal of comfort to the patient. In this case a strong fillet of silk was passed through the stump of the tongue in order that the subsequent introduction of the tube might be facilitated by pulling the stump forward;

but when the tube was removed on the fifth day, and an attempt was made to feed the patient in the afternoon, it caused so much excitement that the tube was replaced and food was introduced as before. He was anxious to remove the tube, as it was of English make, hard and webbed, and was liable, by pressure of the calcareous tracheal rings, to produce a sore. But such an effect did not take place. The tube was removed once in three or four days for the purpose of cleansing and replacing it by a new one if it had become rough. By nourishing the patient through the œsophageal tube they had been enabled to carry him through an attack of catarrhal pneumonia which developed the third day after the operation.

DR. F. LANGE performed œsophagotomy last summer at the German Hospital upon a man about 40 years of age who had swallowed a plate with several teeth some time before admission, but exactly how long he could not recall. Previous to admission, some surgeons had made ineffectual attempts to withdraw the foreign body, which was situated near the entrance to the stomach. Dr. Lange failed under anæsthesia and then performed œsophagotomy, thinking he would thus be enabled to get a safer grasp on the foreign body. He was, however, still unable to extract it, or to push it down, until finally it went down into the stomach under very slight pressure. The further fate of the foreign body was unknown; the man was discharged after some weeks, cured, and had not been heard of since. With regard to the treatment of the wound, he closed the walls of the œsophagus with catgut, inserted only a few sutures in the external wound, leaving it partially open and making free drainage. The man swallowed from the beginning, the first days receiving only small quantities of water and milk administered cautiously. Primary union took place, the wound closing quickly. Dr. Lange thought such treatment would be justified in cases in which the tissue at the œsophageal opening was healthy; he did not know that it would be proper if suppuration had taken place at the point of operative interference. In this case the treatment was quite satisfactory; no food appeared at the external wound.

DR. MARKOE said that success depended entirely upon closure of the œsophageal wound, and, if this could be secured, the method adopted by Dr. Lange was undoubtedly the best. But, if union failed to take place at any point in the line of incision, septic material would be likely to enter it, especially during the act of swallowing food. More recent writers, he believed, were almost unanimously of the opinion that the wound should not be closed.

The PRESIDENT remarked that, in the case of the child whose history Dr. Markoe had related, it would have been very unwise to close the

œsophagus and allow the child to swallow at once, as it would have forced the food into the lacerated tissue on the right side of the œsophagus.

DR. J. C. HUTCHINSON thought that, when it became necessary to introduce the œsophageal tube to nourish a patient, it would be much more convenient to the surgeon, and more comfortable to the patient, to introduce it through the nose. Such had been his experience after extirpation of the tongue, and in other cases. He had observed the same difficulty referred to by the author of the paper when the tube was introduced through the mouth—namely, faucial irritation. He employed the tube for as long a time as fifteen days, taking it out now and then to cleanse it, and substituting a new one if it became roughened.

EDITORIAL ARTICLES.

ON TUMORS OF THE URINARY BLADDER AND THEIR TREATMENT.

In one of the recent numbers of Volkmann's Collection of Clinical Lectures,¹ this subject is treated at length by Prof. Ernst Küster, of Berlin. Until comparatively recently little has been known of the pathology and therapy of tumors of the urinary bladder, although many writers, some as early as the seventeenth century, have recorded their observations on this malady. At the beginning of the present century, A. G. Richter (1802) and Sömmering (1809) published treatises on the malignant diseases of the bladder. Lateral lithotomy was known to them, and although seldom recommended, was conceded to afford the only reasonably sure means for diagnostic and therapeutic purposes. A considerable advance was made by Civiale, in 1842, who distinguished two forms of tumors of the bladder, namely the fungous and the carcinoma, the latter of which he considered very rare. Podrazki (1865), on the contrary, regards the carcinoma as the most frequent of all tumors of this organ. Civiale was opposed to both suprapubic and lateral cystotomy and Podrazki did not recommend them either.

The uncertainty of the diagnosis made all methods of operating appear extremely dangerous. Progress in the right direction could only be made by an increase of our diagnostic resources, and the merit of having to a very large extent aided in this advance, belongs unquestionably to G. Simon, who, in 1875, first demonstrated that the female urethra is capable of very great dilatation by mechanical means, thus rendering the whole interior of the bladder more or less accessible to both diagnostic and therapeutic measures. The method was after-

¹No. 269-268. (Chirurgie N. 84.)

wards adopted for operations in the male urethra and bladder by R. Volkmann, at first in cases of vesical calculi, a year later for the diagnosis of a large myoma of the bladder. Simon's method, however, came into general use only after it had been perfected by Sir Henry Thompson in 1880-1882.

Unfortunately the development of the pathological anatomy of these parts has not kept equal pace with that of our therapeutic means, and we are still far from possessing adequate knowledge of the pathology of these tumors.

Neoplasms of the bladder develop as primary growths, they extend to it from other neighboring organs, or appear there through metastasis from neoplasms in remotely situated organs. The two latter forms of development belong exclusively to malignant growths, and have, consequently, but a limited interest for the surgeon. The primary tumors are found in the female only in the wall of the bladder, but in the male subject also in the prostate gland. These latter are clinically seldom distinguishable from the former, both producing about the same symptoms, etc., and must be considered here as belonging to the subject before us.

The author gives us the following classification of tumors of the urinary bladder:

A. NEOPLASMS OF THE PROSTATE.—1. *Fibro-adenoma* (Klebs); 2, *Myoma*; 3, *Carcinoma*.

B. NEOPLASMS OF THE BLADDER-WALL.—I. Neoplasms arising from the mucous or submucous connective tissue.

1. *Papilloma* (Krämer), *Fibroma papillare* (Virchow). This is by far the most frequent of all tumor-forms of the bladder, and appears singly or in groups. As single growths they are more often met with in the fundus, then in the trigonum and lastly in the lateral walls of the bladder near the orifices of the ureters. Only very rarely have they been found in other parts of the bladder, and then mostly in groups, several small ones clustering around one large polyp. Küster gives us an elaborate description of these papilloma groups, their microscopical appearance, etc. Thompson has described a transition form of papilloma, i. e. to a malignant growth, and which, he says, is characterized by its rich vascularity and cell-infiltration in the tissues

about its base. This latter is without doubt owing to inflammatory irritation, however. The villi are very delicately constructed, the current of the urine during micturition being of sufficient strength to tear them off and causing, consequently, frequent hæmorrhages. The delicate construction of the inadequately supported walls of the blood-vessels in these villi are often also the cause of hæmorrhages. Every contraction of the bladder-muscles must compress the blood vessels at the base of the villi, producing, consequently, hyperæmia of these, and leading easily to the rupture of blood-vessels. These formations, by becoming incrustated with the urinal salts, may deceive one as to their real nature, as they are often taken for vesical calculi. Papilloma are more frequently met with in males than in females. Among 15 cases reported by Thompson, there were but two women, and in Sperling's 42 cases 29 were males. This great difference is no doubt owing to the frequent irritation to which the mucous membrane of the bladder is exposed in males, by the extension of inflammatory processes from the urethra, etc., also to the greater difficulty in urinating in men of middle age. Supporting this latter theory we find that most cases are between the ages of 30 and 60 years, seldom earlier.

2. *Fibrous Polypi and Myxoma*.—These are tongue-like or bulb-shaped formations and are found in the region of the neck of the bladder and its base, not in groups as the papilloma, but spread out, as it were, over an extent of the mucous surface. These growths seldom cause hæmorrhages, on account of their rather tough structure, and are found mostly in children.

3. *Sarcoma*.—Very rarely seen, but five cases having been thoroughly described and recorded, namely by Senftleben, Marchand, Siewert, Heim-Vögtlin, and Schlegtendal. Other less careful observations have been made by Head, Hue, Thornton and Sokolow. The greater number are found in female subjects, also all of the first mentioned five cases.

II. Neoplasms arising from the muscular layer of the bladder.

4. *Myoma*.—The first case recorded is one of Rob. Knox in 1862. Others, as A. R. Jackson, Gersuny, and Gussenbauer have observed this form of neoplasm, but Volkmann, in 1876, was the first who thoroughly described a case of undoubted myoma of the bladder. The

tumor was situated at a considerable space away from the prostate, which excludes the possibility of its having been in any way connected with the latter, a doubt evidently existing in all cases published prior to this. Since then a few new cases have been recorded. Belfield (1881) found a myoma of the bladder in two dead subjects, by accident. The structure of these tumors resembles in most points very closely that of uterine myoma.

III. Neoplasms of the epithelium and glandular structures of the bladder.

5. *Adenoma.*

6. *Carcinoma.*—Clinically carcinomata of the bladder are not distinguishable from those of the prostate, so that the latter will have to be considered in this group. Careful study only of the microscopical structure will reveal the real starting-point of the tumor. This latter is of importance not only from a pathological-anatomical standpoint, but also as regards the diagnosis and the therapeutic measures to be undertaken. As the author justly remarks, it would be of vast importance if Klebs' assertion proved true, according to which, namely, all carcinomata of the bladder originate in the prostate gland, consequently a primary tumor found in the fundus of the bladder in a female subject, could not possibly be a carcinoma. When these neoplasms appear in the region of the neck of the bladder in male subjects, suspicion as to their origin would be excited. Although, doubtless, many of those cases described as carcinoma of the bladder, have really originated in the prostate; it cannot be denied, on the other hand, that carcinoma of the bladder itself does occur, developing in the epithelium of that organ. It would be, says Kuster, very remarkable if the epithelium on a mucous surface so frequently exposed to irritations, etc., should differ so entirely in that respect from other mucous membranes of the body. Bode's treatise on the subject (1884) shows that primary carcinomata of the bladder in women are not so very rare, as we find among the 30 cases collected in his report, 14 females. The form of carcinoma most frequently met with here is the papillary, although the medullary form is not seldom seen, cases of the latter having been recorded by Marchand and others. The cancrioid-form has been often observed by Thiersch, Paget, Winckel, and Thompson, and the alveo-

lar carcinoma, with its singular tendency to colloid degeneration is also occasionally found. All these forms of carcinoma, including also the glandular form occurring in the prostate, develop first as flat circular protuberances on the mucous surface or as more deeply lying lumps with a smooth surface, immovable over the tumor. Various changes in their appearance soon occur, in consequence of the irritation to which they are more or less exposed. Hæmorrhages soon follow, but in many cases precede the development of a cancer. The surface epithelium becomes necrotic and falls off, allowing the urine to come directly into contact with the badly nourished cancer-body which is prone to regressive metamorphosis. Putrid decomposition of the urine follows, producing rapid necrosis of larger or smaller portions of the tumor, keeping the former, in spite of frequent micturition, in a decomposed state. Catarrh of the bladder is the result and the hyperæmic mucous membrane is consequently prone to hæmorrhages. The muscular layer of the bladder is soon attacked, its hypertrophied condition, however, generally preventing rapid perforation. Through extension of the purulent inflammation upwards the kidneys become involved, and death soon intervenes, ending the sufferings of the patient.

7. *Dermoid Cysts*.—They are found both as open and closed sacs. Martini, in 1874, published his observations on one of the latter, found in a newly-born male child. The bladder was closed near the urethra, the urine having been passed through the umbilicus. No anus existed, a communication with the intestine, however, being found. The posterior half of the bladder consisted of a portion of cutis covered with hairs. Thompson records a case of open dermoid cyst in a woman 30 years of age.

Regarding the ætiology of tumors of the urinary bladder, Kuster states nothing of much importance, beyond what is generally known. Foetal predisposition here as elsewhere in the body, has undoubtedly much to do with the development of these neoplasms, as has furthermore pathological irritation. Gonorrhœa of long standing, hypertrophy of the prostate causing stagnation of part of the bladder-contents, lithiasis of long duration, etc., are all causative influences of this state of irritation. Concerning the statistics of tumors of the urinary blad-

we find that, from May, 1871, to January, 1885, of 8,139 cases treated in the surgical department of the Augusta Hospital in Berlin, 305 had diseases of the urinary passages = 3.74%. Among the latter were 10 cases with tumors of the bladder, *i. e.*, 0.12% of the number admitted, or 3.2% of those afflicted with diseases of the urinary passages.

Of further interest is the fact, that during the same period 1,308 patients with tumors were admitted, the 10 with tumors of the bladder making, therefore, 0.76% of this whole number. Gurlt published, in 1880, statistics of 16,637 cases of tumors, collected from the reports of three large Vienna Hospitals. In 66 cases of this number, the bladder was the seat of disease, = 0.39%. Regarding the sex of those affected with this trouble, we find that in Gurlt's 66 cases, 46 were males, 20 females; in Sperling's 114 cases, 78 were males, 36 females; in Thompson's 20 cases, 18 were males, 2 females. Willy Meyer gives 2 cases, both males; Pousson 35 cases, of which 15 were males, 20 females; and finally 11 of Kuster's 12 cases were males. This would make a total of 249 cases, 170 of which were males, and 79 females.

Tumors of the urinary bladder develop in very many cases without marked symptoms. Their existence will be suspected, when bloody urine is suddenly passed by an individual, until then to all appearances perfectly healthy. These hæmorrhages, however, must be distinguished from those caused by other lesions in the urinary tract.

In hæmorrhages from the kidneys the urine is generally evenly mixed with blood, but this may also be the case when slight hæmorrhages of the bladder have taken place and the blood retained long enough to have become diffused in the urine. It is otherwise in cases of tumors of the bladder, at least in the earlier stages of their development. In micturition the stream of urine is at first quite clear, becoming gradually bloody and consisting finally of apparently quite pure blood.

A second very important symptom is the passing of particles of the neoplasm with the urine. This takes place at times to quite an astonishing degree, surprisingly large quantities being passed within a short time. From a microscopical examination of these particles a diagnosis of the existence and character of a tumor may be made. Other

symptoms consist in disturbances in urinating, and pain, in some cases, intense; in others, however, very slight. The patients complain frequently of a heavy, bearing-down sensation in the perineal region, and of a frequent desire to stool. Catarrh of the bladder is never absent in the long course of the disease, adding much to the general discomfort of the patient by the accompanying chills and high fever.

The general form and consistency of a tumor of the bladder may be usually determined by palpation above the symphysis and through the rectum, in women through the vagina. The introduction of instruments should be undertaken with care, as catarrh often results from this procedure. Thorough disinfection of the catheters, etc., used with a 5% solution of carbolic acid is advisable; also a careful cleansing of the glans penis and orifice of the urethra in both men and women, before introducing any instruments. The author employs a catheter of his own construction, having a long opening near its extremity on the under side. He uses this like a scoop, pulling off portions of the neoplasm for microscopical examination.

Hæmorrhage should not be feared, from its use, as it is slight if it occurs at all. A further means of diagnostic value is endoscopy of the bladder or cystoscopy, of which there are two methods. By the one, the older method, the light is directed from without, through suitable tubes into the bladder (Désormeaux, Grünfeld). In the other method, the source of light (a platinum wire kept glowing by means of an electric current) is carried directly into the bladder. Of all methods of examination, however, the most important is the digital exploration, for the knowledge of which we are indebted to Simon's method of dilatation of the female urethra mentioned above. The introduction of the finger into the bladder in females, after dilatation of the urethra has been accomplished, presents no great difficulty, but in males the case is different. We are obliged here to open the urethra in the membranous portion and dilate the prostatic portion so as to pass the finger into the bladder. Some operators, as Volkmann, use the finger as a dilator instead of the instruments constructed for that purpose. The author used Simon's specula, modified somewhat. Although palpation is without doubt our best means of examination, still even this at times misleads us. Küster gives the history of a case where the con-

centrically hypertrophied bladder-wall led him to believe in the presence of a carcinoma. the autopsy, however, showing the case to have been one of purulent cystitis. The irregular fossæ between the trabecula gave the feeling of a deep irregular destruction of the tissues.

If we take a retrospective view of all the diagnostic means at our disposal, we shall see that no single one of these is in itself sufficient to enlighten us completely as to the nature of the trouble, in all cases, but that a combination of several will be necessary for this purpose.

Since benignant neoplasms in the bladder, with hardly an exception, threaten the existence of the patient, their removal is therefore desirable. Tumors attached by means of thin pedicles are removed in various ways. Volkmann twisted the tumor in one case; Kocher uses a scoop, passing it into the bladder along with the finger. Thompson advises, in cases where the pedicle is thick and large, to tear it away or bite it off with the forceps. For this purpose he has constructed a forceps with denticulated edges, similar to those used for the extraction of stones from the bladder. The use of the instrument requires the greatest care, the danger of injury to other parts being considerable. At times it will be possible to draw down the tumor (especially in female patients), far enough to get a clear view of the point of its attachment to the bladder, when it can be easily removed by the knife and the bladder walls closed with sutures, thus effectually preventing hæmorrhage. When the tumor is favorably situated, this procedure may be successfully carried out in males by dilating the urethra in the prostatic portion after the incision in the median line.

If this manner of removal is not possible, either on account of the large size or position of the tumor, the bladder must be opened above the symphysis, in females also through the vagina.

Colpocystotomy was first recommended and improved by Simon, but his method seems never to have found many followers. The author gives but three cases where tumors were removed in this manner, one of Kaltenbach, a second of Lindemann, the third of Schleghtendal.

Epicystotomy is without doubt the best of all methods of removal in both sexes, and gives the most complete survey of the interior of the bladder. Until recently the development of this operation has been rather retarded, owing principally to the fear of injuring the per-

itoneum during the operation, and to producing infiltration of urine in the perivesical tissues.

To avoid the former of these dangers, the bladder should be filled with some antiseptic fluid before the operation, or the incision should be made slowly and carefully, the tissues being divided layer by layer. Petersen fills the bladder with 400 to 600 grammes of some antiseptic fluid, and introduces a colpeurynter containing some 400 grammes of warmed fluid into the rectum. By this latter means the bladder is forced up over the edge of the symphysis, rendering injury to the peritoneum almost impossible. Infiltration of the urine into the surrounding tissues will take place only when the urine is allowed to collect in large quantities in the bladder and flow out through the wound. This is best prevented by drainage, a good manner of accomplishing which is to pass a rubber tube, having lateral apertures through the wound and out through the urethra; at the same time plugging up the abdominal wound with pieces of iodoform mull. Guyon uses the thermocautery for removing the neoplasms of the bladder, cauterizing the wound-surface afterwards. The author, however, does not recommend this method, especially in cases of larger growths, as the wound thus left will be long in healing and a constant cause of catarrh. He prefers an elliptical cut around the tumor, uniting the edges afterwards with catgut sutures.

For the extirpation of deep seated tumors, in the fundus or trigonum, Trendelenburg's method for directing the light onto the field of operation may be employed with advantage. This consists in suspending the patient, head downwards, by his legs over the back of an attendant and turned towards the light, so that the latter shines directly into the bladder when the wound-edges are separated. The bladder and intestines sink downwards and parts hidden behind the symphysis come into view.

Of vast importance for the operation and after-treatment would be the possibility of keeping the bladder free from urine during this whole period. This would only be possible by introducing catheters into the ureters and allowing them to remain there for a considerable space of time. That such a procedure may be carried out without grave results, we have seen in a case of Schede, where the catheter remained

in the ureter for seven days. By properly illuminating the interior of the bladder, the openings of the ureters are easily seen and the introduction of instruments not difficult. The author uses for this purpose thin, elastic bougies, as he considers the use of Simon's metal catheters too dangerous.

The treatment of malignant tumors of the urinary bladder has consisted for the main part, until the present, in scraping away portions of them and cauterizing the surface in order to retard, if possible, their rapid growth.

Radical treatment has been only undertaken in cases where the carcinoma was favorably situated, for example, on the anterior wall of the bladder. Successful operations for carcinoma in other parts of the bladder should not be considered impossible, if the limits of the mucous membrane have not been passed, for which, of course, an early diagnosis of the disease will be necessary.

In conclusion, Küster thinks that the therapy of tumors of the bladder, far from being so hopeless as formerly thought, has improved so much that the larger number of those suffering from this terrible malady may be almost definitely cured by a timely and proper operation.

C. J. COLLES.

ON THE PRESENT STATE OF KNOWLEDGE IN BACTERIAL
SCIENCE IN ITS SURGICAL RELATIONS.

(Concluded from page 150).

ACTINOMYCOSIS—ANTHRAX—GLANDERS.

The study of those branches of bacteriology which have direct bearing upon veterinary surgery and public economy has borne more practical fruit than any other department of the science, leading, as it has done, to an early and comparatively complete knowledge of certain zoonotics, as instanced, at least in Europe, by the successful enforcement of public and private measures by legislative bodies and cattle-farmers for the purpose of preventing the occurrence and spread of such diseases. And out of these investigations, of such practical value

to veterinary surgery, a material advance in our theoretical knowledge of those surgical infectious diseases in man has sprung, which owe their origin to contagions contracted from and generally restricted to the lower animals.

Although our knowledge of these diseases appears merely in the light of a side-issue of veterinary bacteriology (a subject which we cannot here enter upon), and has received but relatively little advancement by the most recent investigations, the diseases themselves still offer sufficient interest—an interest even enhanced by the comparative rarity of their occurrence—to deserve a brief consideration in these pages.

Of the diseases referred to, *actinomycosis* is still the most obscure. The general impression is that it is very rare; but it is unquestionably often not recognized, when present, and it is probable that it would be more frequently diagnosed, if the disease were better known.

Pathologically considered the disease in its early stages, manifests itself by the appearance of a soft whitish tumor frequently situated on the lower jaw or in front of the spinal column, and connected with the bone. A section through the tumor shows a great number of softer foci of the color of sulphur, which stand well out against the more reddish ground.

In the course of time the tumor breaks down and an abscess is formed. The pus vented by incision or spontaneous ulceration contains numbers of sulphur-yellow miliary bodies of soft consistence and fatty feel, which are frequently united together in clusters resembling mulberries. By pressure these clusters are easily separated into their elements, which prove, when viewed under the microscope, to consist of inter-twined fungus-mycelia, the single threads of which appear radially arranged around their centers, each one increasing in diameter towards the periphery, where they present bulbous termini. Inoculation experiments prove these fungus masses to be the cause of the disease; hence the name. A proper classification of the parasite, however, has not yet been accomplished, the probabilities being that it belongs to the class of fungi proper.

Actinomyces in man were first described by Lebert,¹ but were not

¹Traité d'anatomie pathologique I. p. 54, 1857. Referred to by Firkert, l. c.

recognized as parasites until Bollinger published his celebrated pathological treatise on the subject twenty years later. The etiology of the disease is still quite obscure, although the frequency of the disease in oxen has often suggested the possibility of infection by the consumption of raw beef—a supposition which would account for the greater comparative rarity of the disease in England and this country.

The localization of the disease in man may be various. James Israel in his monograph of the disease, in which he gives an account of 38 cases,¹ divides all cases into four classes; (1) those in which the parasite gains entrance through a carious tooth or a wound in the oral cavity, and leads to an affection of the jaw; (2) those that present affections of the respiratory tract—which frequently spread to the pleuræ and spinal column; (3) those in which the intestinal canal is primarily affected; and (4) those of doubtful origin. Cases of actinomycosis of the Fallopian tubes spreading to the peritoneum have likewise been reported¹ suggesting an entrance through the genital tract.

In 1884 O. Israel claimed to have cultivated actinomyces in pure cultures on ox-blood serum,² and stated that their growth was slow. This latter statement would very well correspond with the clinical aspects of the disease, which shows the active suppurative processes to be much more sluggish even than in tuberculous disease.³ But the description of the cultures so lacks completeness and lucidity, that his statements have not been generally accepted by bacteriologists. Other culture experiments were commenced by Jahne,⁴ but were never entirely completed. To the knowledge of the present writer no satisfactory cultures of the fungus have been published up to the present time.

Inoculations with the actinomyces-germs have been successfully performed by Ponfick,⁵ Jahne,⁶ and J. Israel.⁷

¹*Zemann*. Ueber die Actinomycose des Bauchfells u. der Baueingeweide beim Menschen, Wien. Med. Jahrb. 1883, p. 477.

²Ueber die Cultivirbarkeit des Actinomyces. Virch. Arch. Vol. 95. 1884.

³*Firkert*. L'Actinomycose de l'homme et des animaux. Paris. Félix Alcan. 1884.

⁴Deutsch. Zeitschr. f. Thiermed. 1881. Vol. 7, p. 155.

⁵Die Actinomycose. Berlin. Hirschwald. 1881.

⁶Centralbl. f. d. med. Wiss. 1880. No. 18

⁷Berlin Med. Society. 13 June. 1883.

Staining of the actinomyces can be effected by any aniline dye, in the same manner as that of ordinary fungi. The staining will, however, again wash out in water. Pilocarmin stains them yellow. In sections they may be stained a different color from the surrounding tissues with the help of aniline dyes, or the sections may be colored in Orseille for one hour, washed off in alcohol and then stained with gentian violet (Weigert).¹

Recent cases of the disease have been published by Zemann² (5 cases), Chiari,³ Middeldorff⁴ (2 cases), Muller⁵ and Magnussen⁶ (4 cases), and, in England, by Treves⁷ and Schattock.⁸

The prognosis of the disease is generally unfavorable, if the infection has in any way spread. Timely surgical interference may effect a cure. Not less than thirteen cases of recovery have been reported. The treatment consists in incision of the abscess and scraping-out of the cavity. The affection is frequently taken for scrofulous disease.

Anthrax, or malignant pustule, as the disease is clinically called in its surgical aspect—charbon, splenic fever, wool-sorter's disease and intestinal mycosis being other synonyms—has always been of great interest to bacteriologists for the reason that it was the first mycotic disease discovered in man, and one, owing to the extreme facility of cultivating the virus, which was especially adapted for inoculation and disinfection experiments.

The bacilli of anthrax, when in contact with a suitable soil, such as potato-slices, gelatine, roots of plants, alkaline urine, or various neutral infusions, and at a temperature of 36° C., soon grow to long filaments in which, after a short time, small oval transparent bodies appear at reg-

¹Virchow's Archives. 1881. Vol. 84, p. 245.

²L. c.

³Ueber primäre Darm-actinomycose des Menschen. Prag. Med. Woch. Schr. 1884. No. 10.

⁴Ein Beitrag zur Kenntniss der Actinomycose Deutsch. Med. Woch. schr. 1884. Nos. 15 and 16.

⁵P. Bruns. Mittheilungen aus der chir. Klinik. zu Tübingen. Tübingen 1884. H. Laupp. (3 Heft).

⁶Beiträge zur Diagnostik u. Casuistik der Actinomycose. Dissertation. Kiel. 1885.

⁷Lancet. Vol. I. 1884, p. 107.

⁸Lancet. Vol. I. 1885, p. 808.

ular intervals, which refract the light in a greater degree than the surrounding parts and survive long after the original filaments have become destroyed. These oval bodies are the spores and again develop under suitable circumstances into bacilli. When treated with chemicals they prove very resistant; so much so, in fact, that it is very generally assumed that any line of treatment which suffices to destroy the vitality of anthrax spores, is more than sufficient to kill all other germs which threaten interference in the treatment of wounds.

The manner of testing the efficacy of antiseptic solutions with anthrax spores is very simple. Silk threads are impregnated with anthrax-bacilli in cultures, and, when the spores are formed are dried. The chemical substance to be tested is mixed with the culture soil in any given proportion, and a prepared thread is laid upon it. In this manner it was shown by Koch that corrosive sublimate-solution, of the strength of 1 in 20,000 sufficed to kill the anthrax-spores; a solution containing one part in 300,000 parts of soil served to exert an inhibitory influence upon their development; that is to say the spores could not develop as long as they remain in contact with this soil; but they were not killed, for on being properly washed off with sterilized water and transferred to other soils not disinfected, they readily developed. These questions have been made the subject of experiment, and papers by Frank¹ and Perroncito,² the former studying the effect of antiseptics upon anthrax after Koch, from whose results in regard to figures he frequently deviates—and the latter extending his researches to the effect of heat and disinfection upon the germs.

Introduced into the blood of man or animals the bacilli do not form spores by means of long filaments, but multiply by division in such a manner that the bloodvessels, in the course of a few hours, become crowded with bacilli and death ensues.

The discovery of the nature of the disease is connected with the names of Pollender,³ Branell⁴ and Davaine.⁵

¹ Ueber die Wirkung einiger Antiseptica auf das Milzbrand contagium. Inaug. Dissertat. Dorpat. 1883.

² Ueber die Tenacität des Milzbrand virus in seinen beiden Gestalten als Spore und Bacillus Anthracis. *Revue für Thierheilk.* 1883, No. 11.

³ Vierteljahr. f. ger. Med. Vol. 8. 1885.

⁴ Virchow's Arch. Vol. 14. 1858.

⁵ Compt. rend. Vol. 57. 1863; vol. 77. 1873.

More recent descriptions have been furnished by Koch, who thoroughly investigated the disease in various series of experimental researches,¹ and extended his experiments to the question of attenuation of the cultures.

Following out Pasteur's discovery that certain cultures of a germ producing cholera in chickens, might be so treated that the virus becomes attenuated, and not only fails to produce the disease when inoculated, but acts in a manner preventive of subsequent infections, analogous to vaccination for the prevention of small-pox, Toussaint² was able in like manner to attenuate cultures of anthrax by subjecting them to heat of 55° C. for a space of ten minutes. And Pasteur himself subsequently found that if the anthrax-bacilli were cultivated throughout at a temperature ranging from 42° to 43° C. the organisms became attenuated and could be employed for preventive vaccination.³

Koch, in his answer⁴ to Pasteur, afterwards proved that these statements needed to be somewhat restricted, and showed that immunity from the disease could be obtained in this manner only in sheep and oxen, and that other animals as well as man could not be benefited by such vaccination methods. The material used for vaccination ("second vaccine") was, moreover, by no means harmless and caused the death of 10 to 15 per cent. of the healthy animals; nor did such vaccination ensure immunity from spontaneous infection—the usual means of acquiring splenic fever through spores taken into the intestinal tract with the fodder—but only against artificial inoculation.

These objections which banished the hope of the use of vaccination methods in the surgical treatment of human anthrax, Pasteur could not refute, his answer being restricted to vindicating his personal scientific position and achievements, which Koch had never intended to impeach; although he had criticised his methods of inoculating with se-

¹ *Cohn's Beiträge zur Biologie der Pfl.*, p. 277. Mittheil. a. d. Kais. Ges.-Amt. Vol. I, p. 49.

² *Recherches experim. sur la maladie charbonneuse.* Paris. 1879.

³ *Bull. de l'Acad.* 1880. 28. *Compt. rend.* Vol. 92. 1881, etc.

⁴ *Ueber die Milzbrand impfung; eine entgegnung auf den von Pasteur in Genf gehaltenen Vortrag.* Cassel und Berlin. 1882.

cretions from the mouth and nose, which abound in micro-organisms, instead of using pure cultures.

The correctness of Pasteur's principle in protecting sheep from charbon by vaccination was fully conceded by German bacteriologists.¹ The duration of acquired immunity of the disease by inoculation is given by Fetz at seventeen to eighteen months for rabbits.² An experiment of Buchner's,³ who believed he could change anthrax bacilli into another species of innocuous germs, the so-called bacilli of hay-infusion, was refuted by Koch, and it was proved that he had simply produced an attenuated form. Other methods of attenuation were subsequently published by A. Chauveau⁴ and Chamberland and Roux,⁵ but since these and further publications are only of a veterinary interest, we may, for the present, pass them over.

A further proof of the advancement of our knowledge of anthrax over that of other species of bacteria is to be found in the extensive chemical analytical researches conducted with anthrax—a step, as has been before remarked, well calculated to further develop our understanding of the etiology of parasitic diseases.

Neucki⁶ chemically analyzed cultures of anthrax spores, and found that the albumen of which they are constituted differed from that of putrefactive germs, in that it was not soluble in acids, but only in alkalies, while the other was soluble both in water, alkalies and dilute acids. Neither contains sulphur.

Szpilmann found that ozone killed putrefactive bacteria, but did not differ from oxygen in its action upon anthrax-bacilli—a fact which has been adduced to explain the morbid action of the germs.

¹ Koch, Gaffky and Loeffler. Experimentelle Studien über die Künstl. Abschewächung der Milzbrandbacillen, etc. Mittheil. a. d. Kais. Ges. Amt. Vol. II, p. 141. 1884.

² Acad. des sciences de Paris. Séance du 4 Août. 1884.

³ Ueber die experim. Erzeugung des Milzbrand contag. aus den Hupilzen. Munich. 1880. Die Umwandlung der Milzbrand bacillen in unschüdl. Bacterien, n. d. entgegung Koch's an Pasteur. Virchow's Arch. 1883. Vol. 91, p. 40.

⁴ Compt. rend. de l'ac. des sciences. May, 1880. ibid. Vol. 96. Nos. 9, 10, 11.

⁵ Compt. rend. Vol. 96. No. 15.

⁶ Ueber das Eiweiss der Milzbrand bacillen. Ber. der deut. Chem. Ges. 1884. H. 16, p. 2605.

Notwithstanding the great amount of good work done on anthrax, the lucidity of the subject is still obscured by the appearance, even at the present time, of statements dissenting from the generally accepted facts and theories of bacteriology.

Thus Osol¹ has lately published a contribution to the subject which cannot be made to agree with our present systems of mycology. Taking the blood of horses and sheep that had died after inoculation with anthrax-bacilli, he sterilized it by boiling for from 3 to 14 hours, filtered it while hot, and repeated this process once or twice, adding a little water each time, and, finally, he poured the liquid into bottles which he closed with cotton plugs and again brought the contents to a boil. This liquid he believed to be perfectly sterilized, as he could not produce anthrax in animals by inoculation of minute quantities ($1\frac{1}{2}$ to 1 ccm.) of it, nor could he infect suitable culture-soils with it. But on injecting larger quantities of this fluid into the abdomen of 17 mice, 16 rabbits and 3 sheep he succeeded—in 7 mice, 8 rabbits and 2 sheep—in obtaining true anthrax, with bacilli and all the pathological symptoms of the disease, which caused their death. Some further animals, 5 rabbits and 5 mice, also died, in the blood of which no bacilli could be found; but the blood of these contained small bodies, highly refractive to light, resembling spores, which in five cases developed on suitable soils to characteristic anthrax-bacilli, and, in all cases, killed the animals inoculated with them. Three rabbits, five mice and one sheep remained healthy. But, what was more surprising, two rabbits and three sheep were shown to have been rendered capable of resisting inoculation with true anthrax, by such inoculations with the filtered sterilized fluid.

Osol believes to have thus demonstrated the existence of a chemical anthrax poison, an anthrax-ptomaine.

Even if these statements do not concur with our present knowledge of the subject, are in direct opposition to all experiments that have hitherto been so often repeated by the highest authorities, and must, therefore, from our present point of view, be criticised as in some manner faulty (the experiments give the impression of inoculations with in-

¹Experimentelle Untersuchungen über das Anthraxgift. Inaug. Dissertat. Dorpat. 1885. Vide abstract, Fortschritte der Med. Vol. IV, p. 244.

sufficiently sterilized spores), it would be unfair to overlook them, until the experiments have been repeated and tested by other reliable experimenters; for, being performed with an organism so well studied as anthrax, they may contain the first steps of an advance in our knowledge of infectious diseases, ultimately leading to some new scientific acquisition, which we have not dreamt of in our bacterial philosophy.

The treatment of malignant pustule, that form of anthrax (the inoculation of a wound with the germ) which the surgeon is usually called upon to attend, and easily recognized by the circumscribed inflammatory oedema encircling the discolored gangrenous center with its characteristic serous discharge, should be in accordance with the general symptoms. If fever is present, it is a sign that the virus has entered the circulation, and no local treatment will be of any avail. The patient should be at once put to bed and kept at rest until the fever has disappeared; the excitement incident to energetic local application to the wound is best avoided. The present writer had opportunities for observing the best results after this treatment, in several cases where inoculations of animals with the serous discharge of the pustule revealed all the virulence of typical anthrax. If no fever symptoms have appeared, it has been advised by Dr. Karg, of Leipsic, to surround the pustule with hypodermic injections of mercuric bichloride, as much as half a grain of which may be given with impunity.

Glanders. Geheimrath Struck announced¹ the discovery of the specific bacillus of glanders by Dr. Loeffler and Prof. Schuetz on the 20th of December, 1882, in the *Deutsche Medicinische Wochenschrift*. The bacillus, very much resembles that of tuberculosis, but does not possess its special staining reaction; it may be stained with methylene blue in watery solution, while it loses the staining obtained in aniline-water, when treated with water containing a little acetic acid.²

Following the special methods of Koch its discoverers first microscopically examined the tubercles found in animals suffering from

¹Vorlaufige Mittheilung über die Entdeckung des Rotzcontagiums im kais. Ges. Amte.

²Hueppe, Methoden der Bact-Forsch. Wiesbaden. 1885, p. 67.

glanders, and here found the bacilli in question always present. They next cultivated the germ in pure cultures on sterilized sheeps' blood through successive generations, and finally inoculated rabbits, field-mice and guinea-pigs with cultures of the fourth or fifth generation (representing a cultivation period of 1 or 1½ months) and thus succeeded in producing both local and general infections. They finally also inoculated two horses with pure cultures, one originally obtained from a horse suffering from glanders, and the other from an inoculated guinea-pig; the first horse died in two week's time.

Very few days after this publication, Bouchard, Capiton and Charrin¹ claimed to have found the specific organism of glanders, and in a communication in the *Bulletin de l'Académie de Médecine*² Vulpian and Bouley claimed priority of the discovery for these gentlemen. Their description, however, refers to round or ovoid movable bodies, and not to bacilli, so that it is probable that their cultures were not pure ones, yet they must have contained some elements of the specific germs as their inoculation experiments were successful. The discovery of the *bacilli* is therefore attributed to the German scientists.

More recent culture-experiments have been performed by Kitt³ on potato-soils and on blood-serum, and have served to corroborate the statements of Loeffler and Schütz, besides demonstrating the property of the bacillus to develop at a temperature of 25° C., a degree of heat normally obtaining in moderated climates, and calling attention to the existence of spores, more resistant to destructive agents than the bacilli.

The disease in man is very rare; recent cases have been described by Bucquoy,⁴ Esser and Schütz⁵ and Ballance,⁶ in which either the bacilli were found or inoculations proved successful.

W. W. VAN ARSDALE.

¹Sur la culture, etc. *Bull. de l'Acad. de Med.* 1882. No. 51.

²No. 41. 30 Octob. 1883. "Sur une note communiquée," etc.

³Versuche über die Züchtung des Protzpilzes. *Jahresber. d. Münch. Thierarzneisch.* 1883-84, p. 56.

⁴*Bulletin de l'Acad.* 24 Juni, 1884.

⁵Rotzübertragung auf Menschen. *A. d. Mittheil. a. d. k. preuss. Veterinar-Sanitäts-Ber.* 1882-83. *Arch. f. wiss. u. priv. Thierheilk.* Vol. XI, p. 92.

⁶*Lancet*, Vol. 1. 1885, p. 200.

INDEX OF SURGICAL PROGRESS.

GENERAL SURGERY.

OPERATIVE SURGERY : SURGICAL ANATOMY : SURGICAL INSTRUMENTS AND APPARATUS.

I. Simplified Technique for Extirpation of Atheroma.

By Dr. C. LAUENSTEIN (Hamburg). The attenuated skin over wens in the scalp makes it difficult to peel out the cyst, after the usual cross-incision, without rupture. The cut skin also becomes relaxed and so retards its separation.

L. makes a 1 to 1½ ctm. long radial incision through the skin at the lowest point of the little tumor, pushes in the small handle of the scalpel on the flat, and by lateral strokes quickly separates off the skin. A clip with the scissors then sufficiently lengthens the incision to finish removal. *Centralb. Chirg.* 1886. No. 26.

W. BROWNING (Brooklyn).

II. A New Operation for Fracture of the Patella. Subcutaneous Patellar Suture with Silver Wire. By Prof. ANTON CECI (Genna). After pointing out the main disturbances incident to fracture of the patella, the author first concisely reviews the different methods of treatment heretofore recommended and practised for the injury. Suture he believes hardly encouraging, in the face of the existing statistics; yet appliances and bandaging frequently in his opinion cause ankylosis, and hardly ever effect good consolidation. The author therefore proposes the following method of treatment, which he believes equally serviceable in recent cases and in those of long standing, as well as in cases where a lengthy fibrous callus has been formed without any fear of ankylosis obtaining; he also recommends it as a prophylactic measure in recurrent fractures.

Before operating, the effusion into the joint should be removed by

aspiration, especially if it be large, and the joint washed out afterward; or a splint may be applied and the operation deferred for about three days, until absorption have been completed.

The operation is performed with the help of a drill; this is described as a small cylindrical rod of pliable steel, 2 mm. in diameter and about 8 cm. in length, the end of which resembles a fine raspatory and is perforated with an eye. This end should be broader than the rod. An assistant holding the limb of the completely narcotized patient in hyperextension, approximating the two fragments of the patella and moving the skin in folds towards the centre of the patella; the operator pierces the skin with the drill under the patella and forces it with slight rotatory movements diagonally through the substance of the patella, keeping it parallel to the larger surfaces of the bone, and transfixing it in an oblique direction from the inner part below, upwards and outwards. The point passes out through the skin above. He now threads the eye with a silver wire and, retracting it, pulls the wire through the patella and out at the first point of insertion. He then repeats the operation in the other diagonal line of the patella, in like manner, but at right angles to the first perforation, having previously passed the wire under the skin around the lower margin of the patella to the lateral aspect of the bone. He then again passes the end of the wire under the skin above the upper margin of the patella, and finally twists the two ends thus approximated tightly together, and buries the twisted part. The assistant must hold the fragments in apposition unmoved throughout the operation, and care must be taken not to get the wire tangled or twisted into loops. The skin having been moved out of place during the drilling, the perforations are removed from the wire when the tension is relaxed.

The wire lies to a great extent embedded in the substance of the patella in the shape of a figure 8. The whole procedure is to be carried out under strict antiseptic precautions, and may be speedily performed.

The indications for the operation are given as follows: (1) Patellar fracture of recent occurrence (perfect adaptation being always possible in narcosis). (2) Fractures of longer standing; freshening up of the edges is unnecessary since the irritation caused by the wire alone suffices

to produce the required callus. (3) Recurrent fractures, for which the operation is a prophylactic measure.

The author has twice performed the operation with excellent results. —*Deutsch. Zeitsch. f. Chir.* Bd. 23. Nos. 3 and 4. March 10. 1886.

III. On the Fasciæ and Interfascial Spaces of the Neck.

By Dr. KR. POULSEN (Copenhagen). Various authors very widely differ in their opinions as to the descriptive anatomy of the cervical fasciæ. The reason for this lies in the fact that the fasciæ of the neck do not correspond to those of the extremities. A connective tissue only more or less sparingly interspersed with fibrous elements, takes the place of fascia in the neck. The results of dissections, therefore, may vary, one anatomist finding two laminæ where another finds none at all, according to the development or the leanness of the subject and the technical skill of the dissector.

Henke, indeed, who examined the anatomy of the neck with the help of artificial local injections, came to the conclusion that in reality no continuous fascia of the neck existed.

Viewing this conclusion somewhat skeptically, the author followed a different mode of investigation. He first froze his subject by means of salt and ice, and then made a series of sections through the neck with a saw. After hardening the sections in alcohol for one month, he could easily perceive and trace out the connective tissue and thus obtain suitable specimens for demonstration to aid him in his subsequent experiments.

For wherever he discovered interfascial spaces, he injected colored masses and thus endeavored to show their configuration and inter-relation, and to demonstrate, upon a basis of surgical anatomy, the true conditions favoring the descent of abscess-pus along the fasciæ.

These experiments were performed on 64 cadavers, about 100 separate injections being made, which are given in detail. Upon the results obtained the author bases his description of the fasciæ of the neck and the spaces between them; he points out, however, that the course which abscesses follow in their descent may vary from the course taken

by his injections, owing to the readiness with which pus destroys tissue.

Among the spaces minutely described are the following: (a) supra-sternal space; (b) inferior cervical triangle; (c) retrovisceral, and (d) previsceral space; (e) the spaces inclosing the artery and the vein; (f) the submaxillary region; (g) the parotid; (h) the sterno-cleido-mastoid region, and (i) the lateral region of the neck.

Two handsome colored lithographic plates accompany the article.—*Deutsch. Zeitsch f. Chirg.* Bd. 23. Hft. 3, 4. March. 1886.

W. W. VAN ARSDALE (New York).

IV. Antiseptic Surgical Instruments. By Dr. TH. HEIDENREICH (Moscow, Russia). In the surgical section of the Congress



FIG. 1. LIGATURE [AR. Showing construction.

of Russian physicians, held last January in St. Petersburg, Dr. Heidenreich read a paper on "Antiseptic Surgical instruments," using for demonstration the instruments manufactured by the firm Shvabe, of Moscow. Dr. H. holds that in order to be antiseptic the instruments must be made of a hard material which could not be scratched and in which no crevices could be formed. The material must resist chem-

ical or thermic influences, and must not rust after having been treated with an antiseptic fluid. The instruments must be made of a single solid piece of metal, or at least they must be easily taken apart without help of any tools. All parts of the instruments must be smooth and round, admitting no sharp edges, corners or blind holes. Steel and glass are the only material which can be kept aseptic, the former being nickel-plated or galvanized.

In 1879 Shvabe for the first time prepared the antiseptic cases of instruments for the physicians who were to battle against the plague in

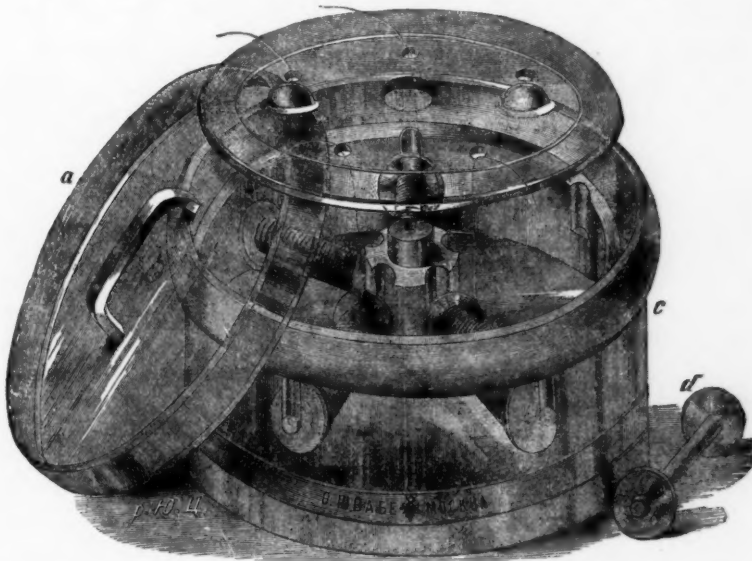


FIG. 2. LIGATURE JAR. Ready for use.

south Russia. The cases proper were made of polished wood, capable of a thorough disinfection; no silk or velvet was used in them. Since then Shvabe has tried to observe the principles laid down above, and with success. In his factory he has discarded completely wood, bone and even vulcanized rubber, making his instruments of solid steel. This example is now followed by many manufacturers in Germany and Austria.

It is of great importance for surgeons to have disinfected silk at hand. Shvabe makes a special jar for that, holding five numbers of silk, hermetically closed and yet easily accessible (Fig. 1). This jar

consists of the following parts shown in the illustration: a round jar (c) contains an axis with five grooves, to which correspond as many grooves in the jar itself. In these grooves are placed spools (d) made of a dull glass; silk is wound on these spools. A flat lid of glass (b) covers the jar; it has a large hole in the centre, corresponding to its axis, and five small holes, marked by figures from 1 to 5, and designed for passing the ends of silk from the spools. The lid can be lifted by means of two button-shaped handles. The exterior lid hermetically covers the jar; it is provided with a handle. As all the parts of the jar are made of glass, they can be thoroughly disinfected. The same jars are made for wire.—*Chirurgitchesky Vestnik*. (St. Petersburg). March, 1886.

P. J. POPOFF (Brooklyn).

HEAD AND NECK.

I. On Trephining for Hæmorrhage from the Middle Meningeal Artery into the Closed Cranial Cavity. By Prof. KROENLEIN (Zürich). The substance of this paper, read before the 58th convention of German Scientists and Physicians at Strassbourg in September last, forms a complement to Wiesmann's article on the same subject,¹ the author extending the conclusions drawn from the observation of cases at the Zürich clinic, up to the present time.

Within the last three years, it appears, the author had occasion to trephine four times for rupture of the middle meningeal artery; the operation, however, only proved successful in two of the cases, and the fatal termination of the other two, with their post-mortem evidence, first suggested the plan of operative procedure set forth in the present paper.

Two of these cases have already been given by Wiesmann, to which the author adds two new ones, and, referring to W. in all points of symptomatology and diagnosis—so fully does he endorse his assistant—proceeds to ask in what manner we shall act, when the diagnosis of brain-pressure resulting from rupture of the meningeal artery has been arrived at by means of cerebral symptoms alone, and when no marks

¹ Vide ANNALS OF SURGERY. Vol. 2, p. 502. Dec. 1885.

of external violence indicate the point of lesion. In these cases W. had proposed to apply the trepan at different points at random, being led by attempts at localization of the cerebral symptoms. But the present author proposes to advance methodically in all cases according to a fixed plan of action, deducible from the following considerations.

All hæmatomata resulting from rupture of the arter. mening. med. or its branches, though individually varying within certain limits in form, may be reduced to certain types—at least when grouped according to the symptoms of diagnostic importance. One group, the diffuse hæmatomata, may extend over the inner surface of an entire half of the skull, extending from the internal occipital protuberance to the frontal tuberosity and from the falx cerebri down to the planum orbitale, the floor of the temporal cavity and the tentorium cerebelli respectively.

Another group, the circumscribed hæmatomata, being more sharply defined than the diffuse ones, and representing a circle or an oval in outline, and a lens in shape (as being of greater thickness in the centre than at the margin) may be subdivided according to location.

The most frequent forms are those situated over the middle cerebral cavity, and bounded in front by the margin of the lesser wing of the pterygoid, at the back by the edge of the petrous pyramid (on account of the firmer adherence of the dura mater to the bone at this point), below, by the region of the foramen spinosum, and above, by points beyond the squamous suture, or situated as far up as the margin of the semicircular plane.

Less frequent forms of circumscribed hæmatomata occupy only the region below the parietal tuberosity and do not encroach upon the middle cerebral cavity. They extend upwards to the falx, posteriorly to the internal occipital protuberance and downwards as far as the cerebellar tentorium.

This form the author calls hæmatoma posterius s. parieto-occipitale. The least frequent are the hæmatomata anteriora s. fronto-temporalia; these are situated beneath the frontal tuber and extend downwards to the planum orbitale, from part of which the dura may be torn away, and backwards to the suture cruciata.

The variation in the sites of these tumors is due to variations in the point of rupture, which again depends upon the location and description of the traumatism. The trunk or the larger or smaller branches of the artery may rupture. Generally speaking, rupture of the anterior branch of the anterior division of the artery causes the anterior hæmatoma, while the posterior one is caused by rupture of the posterior branch beyond the point where it passes the pyramid.

The temporo-parietal form, the first one mentioned, ensues after rupture of one of the vessels situated in the temporal cavity. In case the hæmorrhage is slight the circumscribed variety results, otherwise a diffuse hæmatoma is formed. These forms are most frequent for the reasons that the temporal region is very vulnerable, and that the largest vessels are here met with.

Varying location of these hæmatomata unquestionably produces a difference in the symptoms, according to the seat and extent of the lesion and its local effect upon the psychomotor cortical provinces—in some cases contralateral paralysis of the upper extremity alone, in others of the facialis alone; again in others paralysis of the upper and lower extremity combined, resulting. But frequently the cases are not such simple ones, and complications such as concussion, contusion of the brain and apoplectic foci exist, and the patient may be intoxicated, so that the surgeon is satisfied, if at all he can diagnose rupture of the artery and decide upon which side it is situated.

The question, then as to the point where the trephine is to be applied, is to be answered in the following manner: By perforating the skull in the temporal region, we gain access to the area of both the diffuse, the temporo-parietal and the fronto-temporal hæmatoma, and can thus remove the extravasated blood, although we here do not meet the trunk, but only the main anterior branch of the middle meningeal artery. But since the circumscribed parieto-occipital hæmatoma is not accessible at this point, if the first perforation prove of no avail, a second opening should be made in the occipital region to meet the vital indication.

A second opening of this sort is, in fact, advisable in cases of diffuse hæmatoma to permit the more thorough removal of the coagula and ensure complete drainage.

As to the exact localization of the points at which to apply the trephine, the author gives the following directions: Draw a line parallel to the horizontal line of the skull (which runs through the inferior orbital margin to the entrance of the auditory meatus) through the superior orbital margin. Both points are situated upon this line, the anterior one 3 to 4 ctm. behind the zygomatic process of the frontal bone; the posterior one at the point of intersection of this line with a vertical one carried upwards directly behind the mastoid process.

The localization of the various forms of hæmatomata and of the points selected for trephining is illustrated by diagrams.—*Deutsch. Zeitschr. f. Chir.* Bd. 23. Nos. 3 and 4. March. 1886.

W. W. VAN ARSDALE (New York).

II. A Case of Tracheocele. By G. DAREMBERG, M.D. (Menton) and A. VERNEUIL, M.D. (Paris). A man, æt. 73, who had long had a dry, wheezing cough, aside from which his health had always been excellent, presented, in 1884, a small tumor on the left of the trachea, which it seemed to compress, with a prolongation behind the clavicle the tumor being apparently localized in the corresponding lobe of the thyroid gland. There was slight cough, wheezing and suffocation on attempting to ascend stairs; with some variations under various methods of treatment, this tumor continued to develop until in November, 1885, the neck had undergone a great increase in its total volume, without any cutaneous œdema, inflammatory redness nor any vascular dilatation except in the supra-clavicular triangle where the veins were swollen; the movements of the larynx in deglutition and respiration were normal; the trachea was deviated slightly to the right; deglutition has been difficult but not painful for a year, although the ingestion of certain matters has caused paroxysms of suffocation. On the left side of the neck was the tumor, which would appear suddenly and disappear as quickly; at first of small size, it now filled the entire space included between the lower jaw and the clavicle, and between the median line and the posterior border of the sterno-mastoid muscle; its appearance is provoked only by coughing, although cough does not necessarily produce the tumor; it may appear from five to fifty times a day; its persistence is no less variable; sometimes the protrusion

appears and disappears with the paroxysm of coughing, like a balloon, to be inflated and collapsed by expiration and inspiration; at other times, the distension lasts from ten seconds to a minute and a half; it may diminish in part, then stop for a few seconds, and then collapse in an instant; during distension, it is elastic tympanitic and constituted evidently by retained air, for the stethoscope reveals no respiratory murmur; pressure with the hand has no effect upon reduction, which is assisted by movements of deglutition or by inclining the head suddenly to the left shoulder. Beside the tumor on the left side, a similar smaller prominence, which never became larger than a walnut, was developed later in the right supra-clavicular triangle, behind the border of the sterno-mastoid muscle. The theory that the original tumor was a goitre of the left lobe of the thyroid gland was evidently untenable as well as that of a vascular tumor, although there existed a notable turgescence of the veins of the neck; and the diagnosis finally settled upon an aerial tumor, called aerial goitre or tracheocele, and characterized by sudden appearance and disappearance, indolence, the absence of inflammatory symptoms, sonorous resonance, the relation to cough and coexistence of troubles of respiration, phonation and deglutition. The most probable theory of the causation of the tumor is that, there being a constriction of the trachea (as shown by the wheezing, etc.), the membranous wall of the passage became dilated at a circumscribed point in the form of a sac, as occurs in certain aneurisms and synovial cysts; or the softened, inflamed and thinned wall, yielded during the pressure of expiration, the passage being impeded by a mass of mucus, and a sac was gradually developed in the loose inter-tracheo-oesophageal and deep cervical connective tissue, by the same mechanism as is observed in the formation of pneumoceles of the cranium. The danger is evidently in secondary laryngeal troubles, manifested by the paroxysms of suffocation. It was thought best to postpone surgical interference, and the patient finally died in April, 1886, supposably from a rapidly developing adeno-sarcoma of the peritracheal glands, there being a family history of cancer.—*Revue de Chirurgie*. 1886. May.

J. E. PILCHER (U. S. Army).

CHEST AND ABDOMEN.

I. Gastrostomy for Cancer of the Œsophagus. By A. D. KNEE, M.D. (Moscow, Russia). In 1880, in Moscow, Dr. Knee founded a private clinic of his own, specially for surgical cases. He has now 16 beds. For the last four years Dr. Knee has treated 27 cases of cancer of the œsophagus. The patients were 25 males and only two females. In the clinic were treated 17 patients, of whom 6 were lost sight of. Gastrostomy has been performed in 13 cases, of which in 10 the result was favorable and in 3 unfavorable.

The cases with favorable result were as follows:

No. 1. Male, æt. 49, sick 15 months; gastrostomy performed Jan. 2, 1882; lived after operation 9 months; cause of death, cancerous metastasis.

No. 2. Male, æt. 48, sick four months; gastrostomy Sept. 6, 1882; was alive 2 months since, but was lost sight of.

No. 3. Male, æt. 62, sick 5 months; gastrostomy Jan. 21, 1883; lived after operation 5 months and 28 days; cause of death, pleurisy.

No. 4. Male, æt. 40, sick 6 months; gastrostomy Aug. 30, 1883; was seen alive in December, 1883, but was lost sight of afterwards.

No. 5. Male, æt. 50, sick 8 months; gastrostomy Oct. 2, 1883; lived 5 months; cause of death pneumonia.

No. 6. Male, æt. 50, sick 8 months; gastrostomy Oct. 2, 1883; lived after operation 8 months and 17 days; cause of death, pneumonia.

No. 7. Male, æt. 62, sick 5 months; gastrostomy Jan. 13, 1884; lived 9 months; cause of death, cancerous diathesis.

No. 8. Male, æt. 41, sick 7 months; gastrostomy Feb. 7, 1884; lived 9 months and 6 days; cause of death, pneumonia.

No. 9. Male, æt. 59, sick 4 months; gastrostomy, April 14, 1884; was seen alive July 11, 1884, but afterwards was lost sight of.

No. 10. Male, æt. 56, sick 5 months; gastrostomy July 3, 1884; was seen alive November 6, 1884, but afterwards was lost sight of.

Cases with unfavorable result:

No. 1. Male, æt. 62, sick 12 months; gastrostomy Nov. 11, 1881; died within 36 hours; cause, perforation into the left bronchial tube.

No. 2. Male, æt. 39, sick 6 months; gastrostomy Dec. 28, 1883; died on 8th day, from bleeding.

No. 3. Male, æt. 61, sick 8 months; gastrostomy Nov. 15, 1884; died on 12th day, from exhaustion.

In Europe there are known 56 cases of gastrostomy (except those of Dr. Knee) with favorable result.

Dr. Knee protests emphatically against treatment with bougies or probes in cases of cancer of the œsophagus, for fear of perforation into trachea or bronchi, and also of premature opening of the cancerous tumor. No cicatrization can be hoped for in such cases. Out of 13 patients of Dr. Knee, 6 had a complete stricture of the œsophagus, and 7 could pass only small quantities of fluid. The operative technique adopted by Dr. K. is as follows: A primary incision in the abdominal wall, from 6 to 8 cm. long, from the 8th rib, along the margin of ribs. The peritoneum having been incised, he attached the peritoneal coat to the edges of wound. Then he extracted a portion of the stomach and attached it to edges of wound by from 15 to 20 Lembert sutures, taking care that sutures should pass only through the serous coat of the stomach. On having finished this first part of operation (laparotomy), the wound is dressed and the patient is ordered to take ice and opium. Four nutritious clysters per day. The wound was dressed again on 6th day. The stomach was opened on 8th or 9th day, and a tube from 5 to 6 mm. introduced. At first only liquid food (milk, wine, egg) was introduced through the fistula, and afterwards scraped raw meat and even roasted meat. Some patients took by fistula about six pounds of food per day. In one case there was an obstinate vomiting, which disappeared only gradually. Complete cicatrization took place on from 18 to 20 days after laparotomy; therefore Dr. Knee removed sutures only at the end of a fortnight.—*Chirurgitcheskiy Vestnik* (St. Petersburg) January. 1886.

P. POPOFF (Brooklyn).

II. On Sublimate Intoxication after Laparotomy. By Dr. H. KUERMELL (Hamburg). K., who was so instrumental in introducing bichloride as an antiseptic, now reports his unpleasant expe-

rience with it. By limiting the use of this solution and employing principally strengths of 1 to 5-10,000 his first 170 major operations with it showed but one case of poisoning lasting a few days; this occurred in a very fat subject after amputation of the mamma.

Within a few months, however, he has had two cases of poisoning after peritoneal operations. His first nine laparotomies with it passed off well. Then came a fatal case of poisoning in a woman of 30 years. She was of slender build, and very anæmic from profuse uterine hæmorrhages. Interstitial myoma of uterus: laparotomy (operation lasting $1\frac{1}{4}$ hours). Cuneiform excision of tumor; slight loss of blood; warm sublimate solution, not stronger than 1 to 5-6000 was used; vomiting repeated during the night; diarrhœa set in next day, the passages soon containing blood; no fever. She became progressively weaker, and died four days after the operation.

Neither intra vitam nor at the autopsy was there any indication of inflammation about the uterine wound. In the mucous membrane of the ascending and transverse colon were several defects with sharp edges.

The second case was that of a rather anæmic but fairly nourished woman of 25. Papilloma (size of a baby's head) of right ovary, with a large encapsulated ascites. The left ovary, also diseased, was removed at the same time; operation at first well borne; vomiting during the day and severe collapse in the evening; stimulants hypodermically; extreme exhaustion the following day; vomiting had stopped, but the passages became bloody. Injection of 1500. grm. $\frac{6}{10}\%$ salt solution into the left basilic vein, with great improvement in the pulse; it, however, caused a subjective feeling of great fear, lasting all day. Threatening symptoms had subsided by the next day, though bloody passages continued a few days and gums and oral mucous membrane were ulcerated at many points. Final recovery. No relapse up to seven months *p. o.* "From former publications and the two histories just given, I believe we can draw the conclusion that in laparotomy on patients not too much reduced, sublimate solutions of 1 to 5-6000 may be used; that, however, in highly anæmic weakened individuals and

those with kidney affections it is safest to avoid sublimate altogether." *Centbl. f. Chirg.* 1886. No. 22.

WM. BROWNING (Brooklyn.)

III. Treatment of Recent Abdominal Wounds with Hernia of the Omentum. By H. HARTMANN, M.D., (Paris). The writer calls attention to the fact that, although French surgeons have adopted advanced views with regard to abdominal surgery in general, they still hold the method of allowing omentum, protruding from an abdominal wound, to cure itself by sloughing off, and then proceeds to give a detailed criticism of the authorities for this method, showing the crudeness of their reasoning, and that the failures of the method of ligature and return to the abdominal cavity, which caused its former repudiation, were due not to any defect in the method itself but to faults of its application, and recites three successful cases to show the perfect safety of ligaturing the protruding part and dropping it back into the abdominal cavity, all under careful antiseptic precautions, by which a surer, more rapid and more generally satisfactory cure was obtained than was possible by the expectant plan.—*Revue de Chirurgie.* 1886. May.

IV. The Significance of Collapsed Intestine in Laparotomy for Intestinal Obstruction. By J. E. MICHAEL, M.D. (Baltimore). Referring to a statement that a dilated intestine would indicate that the cause of the obstruction is lower down, while a collapsed intestine can only be expected on the peripheral side of the obstruction, the writer quotes two cases, which had come under his observation, in which the small intestine was collapsed while there was an obstruction at the sigmoid flexure, to show that the proposition is not strictly correct or invariably true.—*Med. News.* 1886. May 29.

V. Diagnostical Laparotomy. By C. JOHNSON, M.D. (Baltimore). This paper discusses the subject in a general way and is in accordance with prevalent views on the subject, calling attention to the fact that all intra-abdominal operations are to a certain extent ex-

plorative. Aside from this, he divides cases demanding laparotomy into two classes, (1) cases in which a diagnosis can not be made without its aid, and (2) cases in which, a diagnosis having been made, no definite line of operation can be marked out and no abandonment of active measures entertained or justified. The diagnosis ought to be established in every case, and the opportunity offered by laparotomy should not be delayed too long.

A. VAN DERVEER, M.D. (Albany, N. Y.), speaking approvingly of laparotomy as a diagnostical method, reviewed the points upon which surgeons are at variance, expressing his approval of early operations among the best surroundings and with all antiseptic precautions. The incision should be in the median line; when the intestines are inflated and roll out of the opening, he advises pricking the most prominent loop to permit the escape of gas and secure the collapse of the gut. He would close the abdomen by the deep through and through suture in preference to the method of suturing each layer separately.

J. E. MEARS, M.D. (Philadelphia), would adopt the following order of treatment, (1) external manipulation, (2) internal examination, where it is possible to be made through exploration of the pelvic cavity, (3) aspiration and (4) laparotomy, the most serious of all and to be resorted to after the failure of all other methods. He deprecated rashness but approved of abdominal section in intestinal obstruction, and in gunshot wounds of the abdomen he thought there could be no question of its propriety. He believed that the condition of the peritoneum had much to do with the immunity of operative procedures, and that one which had been accustomed to the presence of a tumor would endure operation much better than a perfectly healthy one.

C. T. PARKES, M.D. (Chicago), believed that the length of the incision had but little influence on the result of the operation, although he had observed that, in the cases in which it became necessary to extend the incision above the umbilicus, convalescence was somewhat more prolonged. He also was opposed to the suturing the different abdominal layers, and closed the incision by suturing the lips of the wound *en masse*. A case which had been very instructive to him in connection with the danger of opening the abdomen was that of a wo-

man who had been hooked by a cow, the abdomen ripped open and the bowels caused to protrude; these were cleansed and returned, and recovery followed promptly, without even a localized peritonitis. He thought delay in cases of intestinal obstruction wrong and quoted cases in support of this view.

J. F. THOMPSON, M.D. (Washington, D. C.), reported two cases in which laparotomy had been performed for diagnostical purposes. In the first, the patient had been suffering for several years from a tumor, resembling an ovarian tumor in many respects, except that it had two sinuses leading from it and opening in the groins; the abdominal enlargement was as great as at the fifth or sixth month of gestation; following up one of the sinuses into the cavity of the abdomen, a large tumor presented, but the flow of pus could not be explained; the tumor being apparently embedded in the abdominal wall, it was thought best to close the wound without further operation; at the autopsy, five months later, the tumor was found to be an enlarged and dislocated spleen. The second case was for a tumor which, being found on opening the abdomen to be an extensive carcinoma, involving the mesentery, transverse colon and liver, was left undisturbed and the patient recovered readily from the operation. He disapproved of the simple continuous suture in closing the abdomen, believing that each layer should be sutured separately so that the internal peritoneal layer may have united sufficiently to prevent the entrance of pus before suppuration shall have been established.

Further remarks were made by other speakers, cases being quoted in which an exploratory operation would have probably saved life, the trend of opinion being in favor of the more frequent application of the operation.—*Proc. Am. Surg. Assn.* 1886.

VI. A Successful Case of Laparotomy for Perityphlitic Abscess. By J. L. HOMANS, M.D., (Boston, Mass.) A boy, æt. 11, had suffered from pain and tenderness in the right iliac region for five days; dulness was found on percussion. and the temperature and pulse rate were high and increasing. In pursuance of the policy of early interference an incision was made, about $2\frac{1}{2}$ inches long, without previous aspiration over the most tender point, and the peritoneum

opened; healthy intestine presenting was pushed aside, and beneath it were found loops of intestine bound together by a recent plastic process, and by poking about with the finger an abscess was torn open, evacuating two ounces or more of foul pus. A double drainage tube was inserted and the wound closed, the patient making a prompt recovery.

Especial attention was called to the early period at which the operation was performed on the fifth day of the sickness and the second after being seen by a medical man.—*Boston Med. and Surg. Jour.* 1886. April 29.

VII. Perityphlitis. By H. B. SANDS, M.D., (New York). Quotes six cases of perityphlitis, wishing to emphasize the necessity of absolute rest in the treatment of this affection. The first was the case of a physician who was doing fairly well, but who, while the disease was in progress, was allowed to take several cathartic medicines, each of which only aggravated the trouble, and finally, after a copious passage produced by an enema, he fell into collapse and died, with no cause for the existing perforation of the appendix visible on autopsy. It was evident in this case that the difficulty had been confined within narrow limits for a while, and undoubtedly a better chance for recovery would have been afforded if the patient had been kept absolutely quiet and opium given instead of cathartics.

The second case was that of an old man who had been supposed to be suffering from strangulated hernia, but although a hernia existed, the sac was so flaccid that there could be no strangulation, and the case was in reality one of perityphlitis; the patient was allowed to get up and go down town, with the result of precipitating a peritonitis and death. Autopsy revealed perityphlitis with perforation of the vermiform appendix and an empty hernial sac on the right side. This case also emphasized the importance of rest and opium.

The third case was also of a physician, who had signs of intestinal obstruction during the progress of peritonitis; and the only reason for supposing the trouble to have begun in the appendix vermiformis was the existence of slight pain in the right inguinal region. Later, distension of the abdomen and elevation of temperature to 104° F. oc-

curred; rest, hot fomentations and opium brought the temperature down to 102° F., although the pulse still continued rapid; the speaker was called in at this time, but did not urge an operation, thinking it would offer but little chance of recovery. Death ensued and the autopsy showed the fatal result to have been due to universal peritonitis, originally caused by perforation of the vermiform appendix, the pus not being enclosed as is usual in abscesses of this kind. The only possible surgical success in this case would have been early laparotomy, if an early diagnosis had been possible.

The fourth case was a very stout young man, *æt.* 21, upon whom he operated on the fourteenth day. In this operation, for the first time in his experience, he accidentally cut the intestine, although pus had been withdrawn by the hypodermic syringe, before the incision was made. When he arrived at the tumor, all those present had the impression that a piece of intestine was being dealt with, and it seemed to the operator that there was a portion of the cæcum in the wound instead of the usual abscess cavity; he made a cut with the scissors, and the impression conveyed to his mind was that he was cutting intestine; from the opening came pus and air, but no fæces; fæces appeared, however, the next day, and on the second day in large quantities, continuing for about ten days, having ceased altogether at the end of two weeks. The patient recovered entirely in three weeks; the operator thought the hypodermic needle must have passed through both walls of the intestine before penetrating the abscess.

A fifth case was of a young lad, there being symptoms of peritonitis in connection with perityphlitis; the case progressed well for a week, when subnormal temperature, abdominal distension and other alarming symptoms appeared; an operation was performed and the abscess cavity found to contain pus and fæces; the patient was convalescent when last seen.

The sixth case was a lad of 14, in whom the symptoms had existed for a week and where there seemed to be signs of perforation on the side of the peritoneum; there was marked tympanites and he could make out no circumscribed tumor; after debating whether to cut in the median line or at the side, he decided to make the incision in the latter locality. When the layers of the abdomen were cut down upon,

about a half an ounce of pus was seen to flow from a small opening and the abscess cavity was found to be very smooth; the abscess was doubtless in the cavity of the peritoneum and, as had been suspected, the case was one in which perforation had occurred toward the serous membrane and not amenable to the usual operation.

It having been remarked that the early recovery of the fourth case rendered it doubtful whether the intestine had really been wounded. Dr. Sands said it that was quite possible to have a simple wound of the intestine and also rapid recovery. A remarkable example of this was the case of a young man accidentally shot in the abdomen with a 38-calibre ball, entering the body on the right side of the median line close to the pubes. No fæces appeared on probing for the ball, which could not be found on an incision, extending as far as the spine of the ilium. It was noticed that there was some deep emphysema, which has recently been noted as a sign of perforation of the intestine; the external abdominal ring was somewhat patulous. but no more so than is often the case. On the third day a flow of fæces appeared, the source of which could not be ascertained, although the drainage tube was removed. Afterward, however, air and fæces came from the external abdominal ring, and the bullet, therefore, must have entered the abdomen through this natural opening. The patient recovered, showing that a temporary fæcal fistula might sometimes be established.

It had been claimed that laparotomy could succeed in cases of perforation of the vermiform appendix and general peritonitis, but he believed that, with the latter condition, the operation offered no hope of saving life.—*Proceedings N. Y. Surg. Soc.* 1886. April 26.

VIII. Pelvic Abscess in the Male. By T. H. BURCHARD, M. D., (New York). Defining the lesion as a phlegmonous inflammation occurring in the superior portion of the pelvic cavity, below the cavity of the abdomen, from which it is separated by the pelvic reflections of the peritoneum, and above the muscular floor formed by the levator ani muscle, he calls attention to the fact that the bony lateral boundaries and the dense and almost impervious musculo-membranous floor render it possible for abscesses to originate in the pelvis and produce most acute constitutional disturbance and even very extensive local

disorganization without any distinguishing external symptoms. The burrowing of the pus may be very extensive, passing through the pelvic foramina and appearing externally under the gluteal muscles; penetrating the acetabulum and destroying the hip-joint, dissecting up the aponeurosis of the iliac muscles, producing necrosis of that bone and appearing upon its external surface; emerging from the pelvic cavity and traveling anteriorly along the course of the femoral vessels beneath Poupart's ligament and appearing on the anterior surface of the thigh; penetrating the hollow viscera and evacuating into the bladder, rectum or peritoneal cavity; in fact there is no direction which it may not take after having escaped from its bony confines. The clinical history varies according to the acuteness or latency of the attack, both the constitutional and local disturbances being the greater in the latter, with great pain and febrile phenomena, more or less abdominal distension, tympanites, vomiting, flexion of the thighs, difficult or impossible micturition, proctitis and tenesmus if the tumefaction projected into the rectum, and localized or general peritonitis, if the inflammation spread upwards. Abscesses formed thus acutely are more likely to evacuate themselves spontaneously in either the rectum or bladder, than those of a subacute or chronic character.

While difficult to specify a time, it is logical to suppose that suppuration occurs some considerable time before it makes itself manifest by external tumefaction, the delay being due to the difficulty the pus experiences in getting to the surface, because of the depth of the suppuration, rather than to the absence of pus. The constitutional evidences of internal suppuration are all along more or less pronounced and a carefully conducted examination at this stage may discover the location. Chronicity, however, seems to be the rule with non-traumatic cases in the male, which most frequently occur in the poorly nourished and cachectic in whom inflammatory processes are slow and suppuration tardy; a widely diffused inflammation may pervade the pelvic cellular tissue months before its final breaking down into pus. The diagnosis is often very baffling in such cases, owing to the inaccessibility of the parts and the many different tissues, organs, vessels and nerves affected. Clinically, it is important to distinguish between an inflammatory condition simply and the suppurative stage of the

same condition, the latter of which can not be recognized too early; and likewise between a pelvic cellulitis and general or localized peritonitis and between it and cystitis, proctitis and prostatitis. Surgically it is necessary to differentiate between abdominal, pelvic, ileo-pelvic and perineal abscess and abscess of the ischio-rectal fossa, as well as the exceptional accidents liable to be found here.

The treatment naturally resolves itself into treatment of the cellulitis before suppuration and after suppuration. In the former, rest, morphine, quinine, local refrigeration and local depletion by leeches to the perineum; in the latter, evacuation at the earliest possible moment. In illustration, five cases are related, two of which died of the disease, one of an intercurrent nephritis, one refused assistance and one was treated by an opening extending down five inches from the posterior superior spinous process of the ilium into the peritoneal cavity, the sinus opened and the cavity drained, with recovery.—*N. Y. Med. Rec.* 1886. April 24.

J. E. PILCHER (U. S. Army).

IX. On the Operative Treatment of Carcinoma of the Large Intestine. By Dr. B. RIEDEL (Aix-La-Chapelle). Gurlt's statistics of the Vienna hospitals show that of some 500 cases of carcinoma of the intestinal tract, the small and large intestines were the seat of disease in 109 cases whilst the rectum was affected in 399 cases, a proportion of about 1 to 4. Schramm collected in his work, which appeared in 1884, 34 cases of carcinoma of the large intestine, of which but a few were situated in the transverse or descending colon, by far the larger number being found in the cœcum or sigmoid flexure. During a period of four and a half years, the author has observed 14 cases of rectal carcinoma, and 9 of carcinoma of the large intestine. Of the latter 3 were situated in the cœcum, one in the descending colon and 5 in the sigmoid flexure. Only 5 of the 14 cases of rectal carcinoma were operative. Of these one died in consequence of the operation, whilst 4 are living, 3 without relapse, the other, operated two years ago, having recently showed signs of return of the disease. Of the 3 cases without relapse, 2 were operated in 1883, and were very simple and easy ones to operate. The oldest and most difficult case (woman,

73 years of age,) was operated in 1881. The carcinoma was situated so high up that the author, after opening Douglas' cul-de-sac, was obliged to pull the lower part of the sigmoid flexure downwards and divide it transversely between two elastic ligatures, the gut being excised from above downwards. All glands in the cavity of the os sacrum were removed. Patient recovered and is at present in good health. Of the 9 cases of carcinoma of the larger intestine, 2 would not submit to an operation and died shortly afterwards. In the third case (man, æt. 65, with carcinoma cœci) an exploratory incision showed that the disease had progressed too far to admit of a radical operation. An artificial anus was therefore made above the cœcum, but this condition becoming unbearable to the patient, the abdomen was closed and the patient died two weeks later from perforation of the carcinoma. The fourth and fifth cases (man, æt. 65, woman æt. 70, both with carcinoma of the sigmoid flexure) had severe symptoms of ileus on admission. In both cases an artificial anus was made, but too late, death taking place 24 and 48 hours respectively from peritonitis, caused by minute perforations above the small ring-like carcinoma. Case 6 (woman, 45 years of age) was one of carcinoma of the sigmoid flexure, with strong adhesions to the pelvis. When admitted severe symptoms of ileus were present, tympanites, vomiting, etc. The colon was opened in the left inguinal region. After the contents of the bowels had been emptied, it was found that the tumor was absolutely non-operable, and an artificial anus was therefore made. Patient left the hospital in good condition. Case 7. Woman, æt. 54. Carcinoma of the sigmoid flexure causing great stenosis. The gut was resected for 6 ctm. above and below the tumor. Both ends were attached by sutures in the abdominal wound, the author intending to unite them later, when the bowels had emptied themselves. The patient, however, was well satisfied with her condition and would not consent to undergo another operation. She recovered and is at present perfectly well, no signs of relapse being observed.

Riedel's eighth case is a highly interesting one. The patient, a gentleman, 51 years of age, had been annoyed with intestinal disturbances for about one year, having noticed the tumor six months before. When first seen by the author, a lump the size of a hen's egg was distinctly

felt in the right inguinal region. Immediate operation was urged by the author, the patient, however, acting on the advice of Michaux (who considered syphilis to be the cause of the tumor) went to Aix-Lachapelle for treatment. He continued to grow worse, and consulted the author again in August, 1885, being then in an emaciated and very forlorn condition, with decided icterus. The tumor was now found to have increased very much in size, having several distinct superficial prominences, which were thought to be infiltrated glands. No tympanites or pain present. Operation was not advised, but at the urgent request of the patient, an exploratory incision was undertaken. No infiltration glands were found, and a radical operation was at once determined on. The carcinoma was situated in the cœcum. On account of adhesions the whole ascending and a portion of the transverse colon had to be removed, the ileum being divided. The mesenterium had been necessarily subjected to considerable maltreatment during the operation, on account of which it was held to be advisable to suture the ends of the severed intestine in the abdominal wound. This was fortunate as large portions of the mesenterium became necrotic, and abscesses found along the edges of the sutured gut, by means of which the necrotic portions of mesentery were expelled. Patient did well; lost his icterus, and his appetite returned. Two months later the intestine was united with sutures of fine silk, after about 6 ctm. had been removed from both ends. Eight days later first stool per anum took place. In six weeks patient discharged cured. No signs of relapse up to the present time.

Case 9. Woman, æt. 50, with large non-operable carcinoma of the sigmoid flexure.

A glance at these cases will show that disturbances in defecation (alternating diarrhœa and constipation) occur in all cases of carcinoma of the larger intestine. The symptoms of ileus do not appear so often in these as in the carcinoma of the sigmoid flexure, the fæces being quite fluid and soft, even as far down as the end of the ileum, so that they very easily pass through a considerably narrowed lumen. In stenosis of the sigmoid flexure the fæces collect slowly until large quantities are present, when vomiting, etc. appears, and then perforation above the strictured part. Although the real state of the pa-

tient is not always recognized, a diagnosis should not be difficult. To this end injections of water into the rectum may be advantageously used. If not more than 200 grammes enter, there is certainly a stenosis present. In carcinoma of the cœcum there is often, perhaps, a tendency to mistake the tumor (movable in all directions) for a benignant growth, lying laterally to the intestine, or in the mesentery, inasmuch as disturbances of the intestinal functions are often so very slight at the beginning. During the further progress of the disease the usual symptoms of stenosis of course will appear. In most cases the ages of the patients ranged from 40 to 60 years, but this form of carcinoma has been frequently observed in persons of 20 to 40 years of age. Radical removal of the new growth has been, according to Schramm's statistics, (to which one case of Schede must be added), performed in 22 cases, in 13 of which the result was unfavorable, recovery taking place in 9. Riedel thinks that the operation will never attain any very great results, as the patients present themselves too late usually.

Regarding the technique of the operation, the author cautions against uniting the ends of the severed gut, if tympanites be present, preferring the artificial anus. Union takes place easily and quickly if large portions of the serosa are brought in contact with each other. R. used very fine rounded curved needles and correspondingly fine silk. He has never had a case of gangrene of the edges, nor failed in a single case to get union. On uniting the gut later on, those portions which have been secured in the abdominal wound, should be removed. The intestine may be divided from the mesentery for a centimeter, without risk, care being taken to close the slit in the latter. The first row of sutures should unite the muscularis and a small strip of the serosa, whilst a second row should bring the surfaces of the serosa together, for the space of $\frac{3}{4}$ cm. The intestines should be thoroughly emptied before the operation, to prevent soiling of the same with fecal matter. The author advises delay in uniting the intestine ends, owing to the impossibility in so many cases, particularly in cases of incarcerated hernia, of determining the real state of the gut at once. Resection and suturing ought not to be undertaken, he says, until the intestines are thoroughly emptied of their contents, which should take place

in the course of 24 hours.—*Deut. Med. Woch.* No. 15 and 16. April 15 and 22. 1886.

C. J. COLLES (New York).

X. Case of Cholecystotomy. By Dr. A. LANDERER (Leipsic). The wife of a shoemaker, æt. 35, suffered for about eight months from severe pains in the region of the liver. No stones were passed; no jaundice occurred; the pains were intermittent in character. A tumor of the size of a child's head, with irregular surface and hard to the feel, could be made out in conjunction with the liver and participating in its movements. The lower portion gave a tympanitic note, and the tumor, slightly movable under the integument, was painful on pressure, especially near its upper part. Urine and pelvic organs normal.

Incision parallel to the median line over the tumor revealed the tumor adherent to the transverse colon and covered by hepatic tissue, and connected with the mesocolon behind. Tapping produced mucus and pus, and verified the diagnosis of empyema of the gall-bladder.

As extirpation was impossible, the author stitched the liver to the abdominal wall around the incision by means of five silk sutures, and applied sublimate and iodoform dressings. After six days during which no febrile reaction occurred, a large trocar was inserted into the gall-bladder through $2\frac{1}{2}$ ctm. of liver tissue and drainage established. Subsequently the opening was enlarged by Pacquélin's cautery.

The patient made a good recovery, the pains were effectually cured, and only a fistula remained, through which only a few drops of ropy mucus were daily discharged.—*Münchener Med. Wochenschrift.* 1886. No. 17.

XI. Enterotomy for Ileus. By Dr. F. FUHR (Giessen), and Dr. F. WESENER (Freiburg, Baden). In reviewing the various opinions hitherto expressed of the relative value of enterotomy and laparotomy for the relief of ileus, the authors compare the two methods together critically, and decide in favor of enterotomy.

One case is given. A widow, æt. 47, had worn a pessary which had pressed the sigmoid flexure of the colon against the sacral bone and here caused local circular inflammation, which subsequently led to a

stricture of the gut. Ileus set in and the patient's life was saved by enterotomy performed in the left inguinal region, the transverse colon being stitched to the wound. The fæces, however, could pass the artificial anus in part; and as they could not pass the strictured gut, in the course of time the intestine between the artificial anus (in the transverse colon) and the stricture in the sigmoid flexure became enormously distended and pressed upon the abdominal organs to such an extent that death ensued, under the symptoms of constipation, ascites, icterus, vomiting, singultus, dyspncea and œdema of the lungs—about two years after the operation. An ovarian tumor (cysto-adenoma) was also found at the post-mortem, which had not materially influenced the case.

In speaking of the merits of enterotomy as compared to abdominal section, the authors point out how the protrusion of the greatly extended intestines through a laparotomy wound prevent their replacement.

Puncturing the gut with a fine needle they consider too dangerous, for the reason that the internal existing pressure cannot be sufficiently accurately estimated, which might be considerable enough to force out the contents of the intestine into the abdominal cavity after reposition. They concede, however, that the antiseptic method renders laparotomy a less dangerous proceeding than it formerly was. The personal inconvenience attending artificial anus is not at all great, and its existence is not even suspected by those ignorant of it. The fact that statistics show an equal amount of mortality after both operations is accounted for on the ground that the laparotomies attended by fatal results are rarely published.

As to the objection sometimes urged against enterotomy, that a portion of the stenosed gut itself might be opened, and thus no relief be obtained, the authors believe that the abnormal gut may be recognized by the fact that it contains transudated blood. Nor is there much danger of opening a loop of intestine too near the duodenum, if the operation of enterotomy be done in the inguinal region.

The authors explain the fact that enterotomy frequently leads to radical cure of ileus, by pointing out how the operation affords more

space in the abdominal cavity, so that the invagination and axial torsion of the gut may be redressed.

The danger exemplified by the case given, however, still remains an objection to enterotomy. Accumulation of fæces between the opening and the occluded portion of the gut may cause a fatal issue.—*Deutsch. Zeitsch. f. Chir.* Bd. 23. Hft. 3, 4. March. 1886.

XII. A Contribution to the Treatment of Gangrenous Herniæ and of Artificial Anus. By Dr. CARL KOCH (Nuremberg). The author gives two cases of gangrenous hernia, and adds another, still under treatment, at the end of the paper. He then discusses the subject, advocating the formation of artificial anus for all gangrenous cases of hernia.

1. Decrepit woman, æt. 60. Femoral hernia, incarcerated for two days; gangrene of sac and of intestine, and of the cellular tissue. Gut stitched to the wound. On third day gangrenous portions sloughed off. No fever; no peritonitis, yet death ensued during granulation period in consequence of senile marasmus.

2. Woman 45 years of age. Incarceration of hernia for five days. The intestine showed a gangrenous spot $2\frac{1}{2}$ ctm. in diameter. Sutures applied to fix the gut in the wound. Sloughing ensued in eight days to the extent of two-thirds of the circumference, much more than was anticipated. No peritoneal or febrile reaction. Some eczema due to the sublimate dressings. After two months Dupuyten's clamp applied, three times in all. After five months operation; intestine freed from adhesions to skin and sac, pulled out, and sutured after Czerny's method, with forty sutures. Gut replaced and wound closed with sutures.

Drainage; sublimate dressings. Reactionary temperature 38° C. Good recovery. Patient wears a truss, but hernia apparently again forming.

Although much is to be said in favor of resection of gangrenous portions of incarcerated intestines with suture of the ends and replacement, the author is of opinion that artificial anus formation with subsequent secondary operation is safer as regards the life of the patient. The health of a patient having suffered for some time from incarcerated hernia,

when pain, vomiting, local inflammation, fever and albuminuria have continued for a time, is too bad to admit of a long narcosis, and collapse and shock are apt to be the consequence.

The danger of inducing septic peritonitis by replacing the inflamed tissues of the intestine into the abdomen is very great. The local septic inflammation occurring after gangrene of the hernia may thus be transmitted to peritoneum.

Another danger threatening peritonitis is the direct entrance of faecal matter into the abdominal cavity through the sutured parts. The suture, being performed upon abnormal gut, may at any time give away. Nor can the extent of the sloughing process be accurately estimated beforehand in intestines threatened with gangrene, especially if any portion of the mesentery has had to be removed. As for Schede's proposal to suture the gut and leave it outside of the abdominal cavity the author believes this method to be no improvement on the artificial anus. He therefore concludes that only normal gut should be sutured and returned to the abdominal cavity; but gangrenous intestines should be stitched to the wound, an artificial anus formed, and subsequently a secondary operation performed.

This may either consist of Dupuytren's original procedure, which, however, is tedious and uncertain; or it may consist in resection of the intestine, with suture and replacement, and closure of the abdominal cavity—a more preferable, but somewhat unsafe method; or, lastly, Dupuytren's clamp may be first employed to destroy the septum in the artificial anus, and then the gut may be pulled out, sutured and replaced, the wound being finally likewise sutured. This method is easy of execution; the suture need only be applied to the perforation, a longitudinal suture taking the place of the more difficult and tedious circular one. Nor need the mesentery be touched in this operation, as in resection of the gut.

This proceeding is, therefore, the one which the author recommends for all cases of gangrenous hernia. He adds some more special instructions concerning the technical details of the operation. —*Deutsch. Zeitschr. f. Chir.* Bd. 23. Hft. 3, 4. March. 1886.

EXTREMITIES.

I. Case of Total Extirpation of Scapula with Excision of the Head of the Humerus and the Acromial Portion of the Clavicle for Caries, with Final Recovery with Good Utility of Arm. By Dr. SCHULZ, of Sonnenburg in Neumark. A farm-hand, æt. 16, was admitted to the Johanniter Hospital in Sonnenburg, August 11, 1884, for pain redness and swelling of the shoulder joint. He had gone to sleep July, 1884, and, on awakening, could not move his arm. Treatment with tr. iodine. After one week incision liberating pus. Fistulæ remained below the spine of scapula and in the internal aspect of the upper third of arm. Movement was greatly impaired. Pressure caused pain; temperature 40° C.; pulse feeble; occasional fainting spells. Treatment—tonic, eggs, wine, quinine, phosphates; repeated incision and drainage; arm maintained in fixed position.

Subsequently improvement set in. But incision of an abscess above the spine of the scapula became necessary; the focus was scraped out with the sharp spoon. Roughened bone could be felt over the whole of the scapula with probes, and joint-affection was established.

September 1. Arsenic given, with general improvement; subsidence of suppuration; increase of appetite. Soon, however, another abscess appeared near the acromion demanding incision.

December 12. Extirpation of scapula; incision from spine to angle; subscapular artery tied; head of humerus exsected, as well as acromial end of clavicle, both being carious. Sublimate dressings; reactionary temperature 38.0° ; subsequent reconvalescence.

February 10. Patient up and about; can move fingers and forearm, and rotate and swing upper arm, but cannot abduct it.

May 6. Dismissed with a support; can write; was seen after five months again, still improving.

Some remarks are added and brief mention of twelve other cases is made.—*Deutsch. Zeitschr. f. Chir.* Vol. 23. Hft. 3 and 4. Mar. 1886.

GENITO-URINARY ORGANS.

I. On Extirpation of the Kidney. By Prof. ERNST VON BERGMANN (Berlin). A paper was read at an anniversary meeting of the Berlin Medical Society, containing, besides references to the statistical contributions to the subject by Czerny, Balz and Gross, and general remarks, *five new cases*, and six other ones which the author had mentioned in a previous paper read at the Magdeburg Convention of Scientists in 1885, but which have not as yet been published, making eleven in all.

The unfavorable prognosis of operations for malignant tumors of the kidney may yet be improved, in the opinion of the author, by advances in the diagnosis and technical execution of the operation. Malignant tumors greatly vary in their course, some growing rapidly, others very slowly. Some present early metastases, others none at all. In children a very gradual growth is the rule, leading to intermittent hæmaturia, marasm and weakening diarrhœa, but other cases in which no renal symptoms occur are observed as well. The periods of occurrence of malignant disease, before the fifth and after the fiftieth year, also tend to render the diagnosis easier. The movability of the tumor does not, however, appear constant enough to prove valuable in diagnosis, nor is any constancy to be found in the adhesions of the tumor to surrounding organs. As to technique the author advocates lumbar incision for the removal of malignant neoplasms, and illustrates the dangers of anterior peritoneal section by two unsuccessful cases. If the tumor is too large to be readily removed an oblique lumbar section is to be made, without incising the peritoneum. In this way he successfully operated in one case for malignant disease of the kidney.

Well developed abscess of the kidney is to be treated solely with the knife. The diagnosis can be made from the presence of a lumbar tumor, and that containing pus. The author was able to limit the diagnosis to one kidney in five cases.

Two cases of extirpation of the kidney for pyelo-nephritis are given, one of which ended fatally. A tumor was present and evening elevations of temperature were observed in both cases. The urine was com

paratively clear owing to the admixture of healthy urine secreted from the healthy kidney. Both patients were females and attributed their troubles to pregnancy. In one of these cases a stone in the renal pelvis caused the suppuration. In two further cases the cause of suppuration could not be ascertained. These both terminated favorably, as did also another (fifth) case, in which a kidney was extirpated for perinephritic abscess of large proportions. These kidneys did not bleed when their substance was injured, an observation which materially facilitates similar operative procedures. In certain cases where the pus is concentrated in one point simple nephrotomy may be preferable to nephrectomy. The former should be preferred if the diagnosis is uncertain, and if it is uncertain whether the other kidney is diseased.

One case, in which the author removed the kidney for suppurative processes, ended fatally, and the post-mortem showed that the other kidney was similarly affected. An analogous case where simple nephrotomy was successfully performed, is promised shortly.

In no case did any infection of the wound occur from the incision into the suppurating mass.

Lastly a case of successful operation for hydronephrosis is given, in which the author removed the kidney through a lumbar incision.

The paper abounds in interesting statements and hints pertaining to all the questions of the subject, including treatment, and which cannot here be more particularly considered.—*Arbeiten aus der chir. Klinik der Königl. Univ. Berlin.* 1. Th. II.

W. W. VAN ARSDALE (New York).

II. A Rapid Evacuator for Litholapaxy. By E. ANDREWS, M.D. (Chicago). In the evacuators of Bigelow and Thompson the rubber bulb makes suction only for an instant; when it reaches the limit of its expansion, it suddenly stops the outward current from the bladder and arrests in transit a row of fragments of stone, lying along the whole length of the tube, which at the next compression of the bulb are all thrown back into the bladder; thus a large part of the fragments are pumped out and in many scores of times before they finally escape, prolonging the evacuating stage of the operation tediously

and irritating the inflamed bladder by the repeated forced expansions and by the pelting of the sharp fragments continually shot backward into it. To remedy these defects, the author devised an instrument consisting of a double chambered evacuating tube of which the straight part consists of a cylindrical tube of very thin metal with an outside diameter of $8\frac{1}{2}$ millimetres, and terminating in a rounded tip having a fenestrum like Bigelow's, while the outer end is bent down, terminating in a piece of rubber tube, 9 centimetres long and 1 centimetre inside diameter. Along the under side of the straight portion of this overflow tube is soldered a thin concave semi-cylinder, making an inflow chamber, which is wrapped half around the outflow tube, giving the cross section an oval shape with an outside circumference of about $31\frac{1}{2}$ millimetres, the diameter of the outflow chamber, being $8\frac{1}{2}$ millimetres, while that of the inflow chamber, is 2 millimetres. The inflow channel terminates in forty perforations, each 1 millimetre in diameter. The outer end of the inflow tube projects in a straight line beyond the curve of the outflow and terminates in a cylinder of 10 millimetres, outside diameter, and having a stopcock of the same calibre. To the outer end of this tube is attached a rubber tubing with an inside diameter of not less than one centimetre and a length of about two yards, to the farther end of which is attached a strainer through which a stream of water is to be syphoned.

To use it, the evacuator should be introduced into the bladder with the fenestrum toward the patient's head and held at a steep slope, so that the tip presses the bottom of the bladder gently down toward the rectum, making a funnel-shaped depression into which the fragments tend to fall; now turning the stopcock, a warm $1\frac{1}{2}$ % solution of carbolyzed water is admitted through the inflow division and enters the bladder by the small perforations, sweeping the fragments rapidly around into the fenestrum of the outflow tube and thence outward into a basin set between the patient's thighs; the current being continuous and always in one direction, the evacuation is accomplished with remarkable rapidity. The writer refers to a case where the fragments of a hard oxalate of lime calculus, over one inch in diameter, were almost

completely swept out in *ten seconds*, where, perhaps, twenty-five minutes of churning to-and-fro with Bigelow's evacuator would scarcely have accomplished the same result, and sixty seconds more of the current sufficed to remove the last particle remaining. The difficulty caused by fragments arching over the fenestrum of the evacuator and obstructing the outflow, he overcomes, when the scantiness of the stream shows obstruction, by compressing the end of the short rubber outflow pipe between the thumb and finger and with the thumb and finger of the other hand suddenly compressing the tube just above; this forces a short but strong pulsation back into the bladder and instantly dislodges the obstructing fragments.—*Jour. Am. Med. Assn.* 1886. June 5.

III. Nephrectomy on a Patient Twenty-three Months Old. By R. PARK, M.D., (Buffalo, N. Y.). In the second winter of a child, hitherto apparently healthy, an enlargement appeared on the right side of the abdomen, which steadily increased in size; palpation revealed a firm, resisting tumor about the size of a foetal head at term, the aspirator drew off a brownish, odorless fluid, examination of which gave negative results. The tumor continuing to increase decidedly in size, after the lapse of a few weeks, the tumor being too large for removal by lumbar section, and incision was made in the right linea semilunaris; slight adhesions were found, but the peritoneum, covering the growth, was incised and the tumor shelled out without much difficulty, proving to be, as had been previously diagnosed, a fibro-cystic tumor of the right kidney, the cystic element predominating, and weighing, immediately after its removal, about four pounds. The pedicle was tied and dropped into the cavity, and the patient proceeded to a rapid recovery. A search into the literature of the subject seems to show the patient to be the youngest to have survived the operation.—*Proceedings Am. Surg. Assn.* 1886.

IV. Case of Hydrocele of a Hernial Sac. By R. F. WEIR, M.D., (New York). A woman, æt. 24, had worn a truss for hernia for ten years, and presented at the location of the rupture a constant tumor which was dull on percussion and without impulse on coughing; on grasping it with the hand, it did not give that peculiar ir-

regular sensation, which an omental mass would give, and yet on pressure the bulging was just as if coils of intestine were underneath. In doubt as to the exact condition, but thinking that it might be a fatty tumor, it was cut down upon, looking more and more like coils of intestine, until the sac was arrived at, when clear fluid escaped through a minute incision. The opening was closed to preserve the cyst entire, if possible, and it was finally dissected out entire except at its neck, which ran up to and through the femoral ring; on seizing this neck and applying a ligature and then dividing it, it was found to be a femoral hernial sac, which had been so shut off by the persistent use of a snug fitting truss that the sac had undergone conversion into a cyst; it contained some five or six ounces of fluid.—*Proceedings N. Y. Surg. Soc.* 1886. May 10.

V. The Treatment of Varicocele. By R. F. WEIR, M.D., (New York). The writer concludes as the result of his experience of a number of the methods devised for the treatment of varicocele; (1) that for small varicoceles there is nothing better than a single (or double) subcutaneous ligature; (2) for medium sized varicocele or for cases declining a more heroic operation, excision, in careful hands, is to be advised; (3) for larger varicoceles, for relapsed cases and for those not very large but with a much elongated scrotum, ablation of the scrotum with ligature of the veins is preferable.—*N. Y. Med. Jour.* 1886. March 20.

J. E. PILCHER, (U. S. Army).

WOUNDS—INJURIES—ACCIDENTS.

I. Stunning and Burn by an Electric Lamp. Prof GEO. BUCHANAN (Glasgow). Injuries from electric lamps are becoming not unfrequent. In most of the cases related, death has been instantaneous. In a case reported on January 22, as occurring at Liverpool, the man was stunned and remained unconscious for a time and on recovery was found to be quite blind.

A workman, æt. 44, was engaged on a crane when a "Brush" was by some mischance lowered into contact with the chain of the crane. Instantly the man was "doubled up," but his hands were compelled to

spasmodically grasp the chain so that he did not fall. He remained in this position for four minutes until the lamp and chain were separated. He then dropped down stunned. He recovered consciousness in an hour. There was a slight vesication on the hand where it grasped the chain, and at the part of the sole of the foot, through which the current passed into the ground, two square inches of skin were completely charred, as was also the neighboring part of the stocking.

The general symptoms (which soon passed off) were a slight amount of general shock, a feeling of heat in the abdomen and chest, and dimness of vision.

Sir Wm. Thomson suggests that if a bystander had taken the man by the clothes and drawn his feet from contact with the ground, or had thrust a bit of dry clothing under his feet, the contact would have been broken and the hand relieved from the chain.

C. B. KEETLEY (London).

BONES, JOINTS, ORTHOPÆDIC.

I. On Cases of Sudden Death Resulting from Venous Thrombosis and Embolism after Fractures of Bones. By Prof. P. BRUNS (Tübingen). The author gives one case of his own and a tabular synopsis of thirty-five extant cases. Analysis of these shows that the fractures occurred most frequently in the lower extremity, and in persons of from 40 to 60 years of age. The immediate cause of thrombosis of the veins consists in compression or injury of the veins at the seat of fracture; and some predisposition is usually present on the part of the patient, such as varicosities or circulatory impairment. Embolism may occur at any time between the fourth and seventy-second day after the fracture, and death may result immediately, from asphyxia or syncope, or after a longer period of time from infarction of the lung, or, finally, recovery may take place.

II. On the Behavior of the Bodily Temperature in Subcutaneous Fractures. By Dr. ERNST MUELLER, first assistant surgeon at the Tübingen Surg. Clinic. Rise of bodily temperature after simple fractures of bones was formerly believed to be of rare occurrence; but of late repeated exact measurements have led to the

opinion that high temperatures after fractures were a very frequent symptom.

In the present paper the author has considered 359 cases gathered from his own clinic, and from those of Stuttgart, Halle, London, (Univers. Coll. Hosp.) and from a report by Stickler (New York), and concludes that a rise of temperature is found in subcutaneous fractures in over 85 per cent. of the cases, and is, therefore, the rule.

The author's own cases are tabulated, and present temperatures ranging from 38.0° to 40.0° C. The highest rise was observed on the first and second evening after the accident. In some cases the fever lasted as long as thirteen days. Transportation after the accident did not appear to increase the temperatures. Generally speaking, the temperatures increased in direct proportion to the quantity of extravasated blood; but this ratio did not hold good in all cases.

The Stuttgart cases, which are also tabulated, show lesser elevations of temperature throughout than the Tübingen ones, a curious and unexplainable fact.

The author ventures no explanation of the cause of fever after fractures.—*Beiträge zur klin. Chirurg. Mittheil. aus der chir. Klinik zu Tübingen.* II. Bd. 1. Hft. I.

III. Fracture of the Ulna in Its Upper Third Combined With Dislocation of the Head of the Radius. By Dr. HANS DOERFLER (Nürnberg). The rarity of this injury and its limited literature has led the author to make it a subject of special study, more particularly since it is one of great practical importance. He gives four cases, some of which were observed by himself.

The first case is that of a man, 66 years of age, who, 40 years previously, was kicked by a horse, and sustained a compound fracture of the ulna in its upper third. The radius was luxated. No apposition of the fragments was attempted at the time, and no splints applied. The bones, in consequence, did not unite, and paralysis of the extensor muscles of the fingers resulted, due to a lesion of the musculospiral nerve. Arthritis deformans subsequently set in, and the forearm became entirely useless.

The second case, which was seen seven years after the accident,

presented a compound fracture of the ulna combined with dislocation of the radius and subluxation of the styloid process of the ulna, in consequence of direct violence, caused by a fall down stairs.

The third case, that of a child *æt.* $3\frac{1}{2}$ years, was one of fracture of the ulna simultaneous with luxation of the capitulum of the radius, sustained by a fall from a rocking-horse. The fracture alone was diagnosed at first, but seven days later the consulting surgeon discovered the dislocation. Complete recovery resulted.

The last case was one of the same injury acquired by a fall on the stairs. The fracture is supposed to have been caused by direct violence in consequence of the blow against the edge of the step, and the luxation further induced by a fall on the outstretched palm. The fragments formed an angle with the apex pointing backwards.

In discussing the mechanism of the injury the author concludes from the study of 19 cases, that direct violence alone less frequently occasions it, than combined violence, as exercised by a fall, the proportion being 5 to 11.

The greater number of cases occurred between the ages of 3 and 15, all others after the 35th year.

The question in what causative relation the two injuries stand to each other, is next considered. Grénier's assertion that the two injuries could not be simultaneously produced by means of any applied violence, is disproved by the author, who experimented upon ten cadavers. After chiseling partly through the ulna, he could easily fracture it, and by continuing the pressure, could occasion luxation of the radius.

He therefore believes that both injuries occur simultaneously, but that the fracture is primary and the dislocation of the radius secondary. Further experiments were performed to prove this.

Luxation of the radius proved very difficult to effect, but when present, application of further violence entirely failed to fracture the ulna, but produced typical fracture of the radius in its lower third. After partial incision of the ulna, however, direct violence easily effected the desired injury, luxating the capitulum radii forward and outward, if applied from behind and laterally.

The post-mortem condition of the parts is accurately described in these cases of artificial production of the injury.

The fragment of the ulna is not instrumental in causing the dislocation, in the author's opinion, but the radius-head may be displaced either by the continuation of the same direct violence which caused the fracture, or, by indirect violence, as by pressure upon the extended hand. The first of these modes is illustrated when the patient has been kicked, run over, hit by a stick, shot, or has fallen against some hard object; the latter, when he has first fallen against some hard body and subsequently fallen on his extended hand—as when falling down stairs.

Luxation of the radius cannot occur if the ulna be fractured below its upper third.

These conclusions are drawn from further experiments on the cadaver.

The *symptoms* of the injury are given as follows: Inspection reveals an angle outlined by the contour of the soft parts of the dorsal aspect of the fore-arm. The elbow-joint shows a well-marked bulging either towards the front, or laterally and anteriorly or posteriorly combined. This prominence, caused by the capitulum radii, moves when pronation and supination are performed. The circumference of the injured joint is increased from $2\frac{1}{2}$ to 4 cm.

On the posterior aspect three points can be made out, with the help of which a triangle may be constructed, having as its apex, the point of fracture of the ulna, and, as its base, a line drawn from the olecranon to the capitulum radii. This line passes directly over the external condyle of the humerus, in its middle. The injured arm appears shortened to the extent of $1\frac{1}{2}$ cm. The dislocation of the fragments depends upon the direction of the violence; the lower fragment remaining parallel to the radius in all cases, the upper one varying in position. The fore-arm is generally found half flexed, and half pronated. The elbow is frequently much swollen. Crepitation is always present at the point of fracture. Flexion is interfered with, but extension is possible; supination is somewhat impeded. The ulna alone is shortened about 3 cm.

Complications of the injury are sometimes present and consist in subluxation of the styloid process of the ulna, paralysis of the musculospiral nerve—a frequent source of danger—compound fracture, or injury to the soft tissue, and fractures of the epicondyles or condyles of the humerus, the latter being of very rare occurrence.

The prognosis is quite favorable if the treatment is begun at once, or even within the first six weeks. After two months there is less hope of success on account of the capsular degeneration; a new capsule is soon formed wherever the head of the radius remains, so that function may, in a measure, return, if the fragments of the ulna unite. If the latter does not occur, the use of the hand is entirely lost. Arthritis deformans may occur in later years as a result of the injury. The prognosis of paralyses is unfavorable.

As regards treatment, it is of great importance to bear in mind the possibility of an existence of a luxation of the radius in all cases of ulnar fracture. After replacing the capitulum of the radius with the help of extension and direct pressure from below, the arm is to be fixed in a half-supinated position and flexed at an acute angle at the elbow (so as to eliminate the action of the biceps) by means of a water-glass or starch bandage, to be left on for four or six weeks. The position of half-supination is maintained in order to prevent the new-forming callus from again occasioning a displacement.

In old cases where replacement is impossible, resection of the capitulum radii is indicated. Osteopalinclasis of the ulna may become necessary in some cases. Compound fractures are to be antiseptically treated.—*Deut. Zeitschr. f. Chirurg.* Bd. 23. H. 3 and 4. March 10. 1886.

IV Two Cases of Lipoma Arborescens Genu, Complicated with Recent Synovial Tuberculosis. A contribution to the knowledge of tubercularisation of processes originally of a non-tuberculous character. By Dr. GEORG SCHMOLCK (Halle). Lipoma of the knee-joint being rare, S. refers to one such case published by Joh. Muller and gives abstracts of six other cases of simple lipoma genu. He then describes two cases of arborescent lipoma of the knee observed by him in Prof. Volkmann's clinic. Both cases represent simultaneous

lipomatous degeneration of all the normal villous excrescences of the synovial membrane of the joint, a condition for which the author suggests the name "lioplasia of the synovial villi." This is what the name lipoma arborescens signifies. In the six other cases just referred to, simple lipomata of the joint were present, and the author differentiates between the two forms as regards their origin, believing with Koenig that the simple lipomata are of subserous origin and bear analogy to the peritoneal subserous lipomata.

Especial interest attaches to both cases for the reason that evidences of recent tuberculous affection of the synovial membrane were present in each case. The author quotes Riedel as asserting that tubercular synovial processes frequently appear secondarily subsequent to fibrinous synovitis with melon-seed bodies (*corpora oryzoidea*), and argues analogically that secondary tuberculous affections may also occur after lipomatous degeneration.

The first case is that of a theological student, æt. 23, who 12 years previously had suffered from an acute inflammation of the knee-joint due to contusion and cold, and since then had had recurrences two or three times. The diagnosis of fungous (tubercular) inflammation of the joint was made. Incision, however, revealed four packages of polypous excrescences, which were excised, and also a recent synovial tuberculosis. Microscopic examination showed the polypi to be lipomata and demonstrated miliary tubercles, giant cells and specific tubercle bacilli.

The second case was a farmer, æt. 52, who had had serous effusion into the knee-joint for five years. Villous growths were found in the joint and were removed. Recent tuberculous infection was likewise revealed.—*Deutsch. Zeitschr. f. Clin.* Vol. 23. Nos. 3 and 4. March. 1886.

V. The Treatment of Scoliosis by Massage. By Dr. A. LANDERER (Leipsic). Eighteen cases of lateral curvature of the spine not due to bone-disease and occurring in youthful individuals of ages ranging between $2\frac{1}{2}$ and 21 years, were treated by the author with massage, and with such excellent results that he recommends this mode of treatment in all similar cases.

The cases are given in short and represent both slighter deformities of the spinal column and severer scoliotic affections; many of them had already been in the treatment of renowned specialists for a shorter or longer period, and had had the advantages of the best orthopedic appliances and of methodical exercise; in some cases the trouble had existed for as many as nine years. The results almost constantly far surpassed the expectations of the author.

Starting with the proposition heretofore ascertained, that scoliosis is deformity caused by the inability of the spine to support so great a weight as it is compelled to carry, and confining his subject to those forms of scoliosis, either unilateral or serpentine, which are known as habitual curvatures, as differing from static, traumatic, and other forms, the author proceeds to show that it is the muscular system alone which is at fault, and to the inefficiency of which the deformity is owing.

For this purpose he first examines the physiological or normal action of the dorsal muscles, and shows how the normal s-shaped configuration of the spinal column results out of the simple arc of the spine of the infant, by the action of the cervical and lumbar sets of muscles and the weight of the thorax. Thus muscular individuals present more pronounced physiological curves of the spinal column than weakly ones; they appear to stand straighter.

Other sets of dorsal muscles have the function of preventing the spinal column from leaning laterally. As a mast of a ship is held in its upright position by the shrouds, the spinal column, not unlike a mast composed of many segments, is normally retained perpendicular by means of the dorsal muscles while other shorter dorsal muscles perform the function of holding the segments together. In scoliotic individuals—so the author maintains—the muscles of the back are insufficient to perform their function. This is made evident by the ease with which one can aggravate scoliosis in certain individuals by pressure upon the head. Moreover, scoliosis is more marked and more difficult to cure in individuals whose antero-posterior curvature of the spine is not well developed. Again, atrophy and fatty degeneration of the dorsal muscles is a frequent post-mortem symptom of scoliosis. The habit of leaning to one side and differ-

ences in weights supported by either shoulder are only of importance in deciding the direction of the curvatures, but not, as has been believed, in actually causing the curvatures. Secondary trophic changes in the osseous elements finally render such habitual curvature fixed, whereas in cases of static scoliosis (coxitis, etc.) the curvatures remain flexible on account of the better muscular development.

If, then, scoliosis is due to insufficient muscular action, the only rational treatment is one affecting these muscles. As massage is very efficient in strengthening the muscles, the author believes this mode of treatment a very considerable improvement upon gymnastic exercise.

His method is a combination of "tapotement" and "redressement." The child, stripped to the waist, is laid in a prone position upon a mattress, with its arms extended out in front. The extensor muscles of the back are then tapped with increasing force with the fleshy portion of the hand below the little finger, motion being made only in the wrist-joint, for a period of five or eight minutes daily, or even twice daily. The entire extent of the back, from the hips to the neck, is thus treated. The "redressement" is first applied to the spinal column and subsequently to the ribs and thorax while the patient is standing, the idea being to correct any deformities that are thus amenable to treatment as well as rotary conditions. Finally active exercises are added, including suspensions.

In many cases gratifying results can be achieved after ten or twelve sittings; pain and intercostal neuralgia is often rapidly cured, even in cases of fixed scoliosis, where complete cure is not possible.

Orthopedic apparatus and corsets the author believes much inferior to massage for the reason that they tend to make the muscles degenerate still further; and although they permit straight carriage for a time, the weakness returns as soon as they are discarded. The patients, too, much prefer the treatment by massage, as it increases their sense of muscular action.

As for the time required for treatment, slight cases may be cured in a few months; others demand one year and more. Much, however, depends upon the condition of the bones and the age of the patient.—*Deut. Zeitschr. für Chir.* Bd. 23. H. 5 and 6. 1886.

W. W. VAN ARSDALE.

VI. The Treatment of White Swelling of the Knee. By A. B. JUDSON, M.D., (New York). The writer holds that white swelling or articular osteitis of the knee is an inflammatory affection attended by destruction and degeneration and followed as a rule by impairment of function. Its severity and duration are increased by use of the joint and also by impairment of the general health, which is reciprocally affected by the local disease. It has, however, a so-called natural cure, which occurs when the morbid process is supplanted by the reparative. The object of treatment is to prevent ultimate impairment of function and to hasten the natural cure by improving the general condition and removing causes of local aggravation. Function is to be preserved or restored by subduing inflammatory action. The health is to be maintained by appropriate medication and a proper amount of out-door exercise. Mechanical means should be adopted to secure activity in walking without injury to the affected part. Locally, fixation of the joint is suggested by the weakening and loss of the hard tissues of the joint and by the presence of hyperæmia, and enforced by the general rule that inflammation should be treated by arrest of function. The affected part should also be prevented from bearing the weight of the body, a precept which is suggested by the softened and excavated state of the bones and the infrequent occurrence of the disease in joints which are exempt from this duty, and enforced by the same general rule that the presence of inflammation demands the arrest of function. Fixation is conveniently secured and the deformity reduced by a simple retentive splint, making pressure from before backwards in the vicinity of the joint, and from behind forward at the upper part of the thigh and the lower part of the leg. Arrest of the weight-bearing function, or protection from violence in standing and walking, is to be secured by suspension of the limb, which is conveniently secured by the ischiatic crutch of Thomas of Liverpool, with a high-soled shoe on the foot of the unaffected limb.—*N. Y. Med. Jour.* June 6.

VII. The Use of Drills and Nails after Resection. J. A. WYETH, M.D., (New York), presented some steel drills for fixation of the knee-joint after resection, which he considered to be better

than nails since they could be introduced by drilling with less danger of crushing through the bones; the parts suffered no concussion or chance of displacement as when the hammer was employed; the drill point was smaller than the shaft so that, as it passed through the bone, it became tighter and tighter and remained perfectly firm. He used three of them in operation, two passing obliquely and laterally from the tibia to the femur, and a third in the median line downward from the femur to the tibia.

C. K. BRIDDON, M.D., (New York), thought that fixation of the bones was not attained by the wire suture or by nails as ordinarily used. He had observed that the nails cut through the cancellous tissue of the bones when driven from the femur into the tibia, or vice versa, and he thought that the bones were more surely maintained in position if the nails were driven in the exact center of the bone at the side and at a right angle to the axis of the bone, about three-quarters of an inch above the cut surfaces, one on either side of the femur and the tibia; these nails being wired together at the side of the bones, held them securely in position, a plaster of Paris dressing being applied outside of the wound-dressing.

A. G. GERSTER, M.D., (New York), reported a case of exsection of the knee joint for ankylosis, the result of an acute osteo-myelitis, in a girl, æt. 15. The extremities of the bone, on being brought into position, were secured by nails, the first one passing through the dense bony substance of the head of the tibia into the femur, and the other two passing from above downward from the femur into the tibia, securing excellent fixation and a good result. He had found the ordinary dry goods box nail to answer all purposes; the only precaution he should observe was that of placing his index finger between the bones and the popliteal space so that no nail could be driven through the bones into this space without the operator being aware of it, and also to prevent the occurrence of any lateral displacement during the operation.—*Proceedings N. Y. Surg. Soc.* 1886. May 10.

VIII. Excision for Chronic Disease of the Shoulder-Joint. By L. W. HUBBARD, M.D., (New York). The writer believes that early excision is the preferable treatment for chronic shoulder-joint disease, because of (1) the probability of as good if not better

restoration of the function of the limb, (2) the shorter time which will elapse before the patient will be able to use the limb; (3) the immediate improvement in general health which follows removal of the diseased tissue; (4) the removal of a possible source of general (tubercular) infection, without causing any deformity or disqualifying the patient from engaging in the ordinary pursuits of life—objections which are strong against excision of the joints of the lower extremity.—*Med. News.* 1886. April 24.

IV. Chronic Disease of the Shoulder. By V. P. GIBNEY, M.D., (New York). The purpose of this paper is to show by clinical illustrations the inefficiency of passive motion, with or without an anæsthetic, as a means of relieving fibrous ankylosis, and it may be regarded as supplementary to the preceding.—*Med. News.* 1886. May 1.

JAMES E. PILCHER (U. S. Army).

TUMORS.

I. On the Arsenical Treatment of Malignant Tumors. By Dr. F. KOEBEL (Tubingen). The author reviews the results achieved at the Tubingen Clinic (Prof. Bruns) in the treatment of certain malignant neoplasms by means of internal administration of arsenic.

As regards epithelial carcinomata various experiments were made at one time or another in inoperable cases of mammary disease, with local injections of arsenic; but in no cases were favorable results recorded.

Sarcomata, excepting those of the lymphatic glands, have likewise generally been regarded as incurable by means of arsenic. But the author gives a case of a man 39 years of age who presented multiple sarcomata in rapid growth when admitted to the hospital, and who was completely cured after three and one-half years' time by combined local and internal administration of arsenic. The diagnosis was assured by microscopical examination of an excised portion.

Lympho-sarcomata were not influenced in their course by arsenical treatment, as was proved by the observation of several cases.

The greater part of the paper is devoted to the consideration of malignant lymphomata, in the treatment of which arsenic has always played a conspicuous part.

In order to draw more correct inferences the author first reviews fifty-two cases collected from various sources, and then adds to this number seven cases of Prof. Bruns. He then proceeds to draw his conclusions. The ages of the patients varied equally between 7 months and 72 years. Males were twice as frequently affected as females. In 27 cases the neck alone was affected, in 13 cases the whole body. Statements as to the presence of leucæmia are incomplete. The treatment consisted in internal exhibition of Fowler's solution, increasing to a maximum of 40 to 45 drops daily, and in parenchymatous injections, gradually ascending to 0.4 or 0.5 ctm. daily.

As to the results attained complete cure was observed in 17 out of the 59 cases; but in five of these, recurrences are recorded; in the others no further notes are made. The time elapsing before the cure was complete varied from one to six months. Recurrences varied in the time of their appearance from two to eight months.

In 14 cases the recovery was partial. In 28 cases out of the 59 the treatment was altogether ineffectual. In some cases, however, the time allowed for observation was too short.

The author concludes that the treatment should be continued for at least two months in order to ascertain whether it will prove of avail or not, and recommends the trial of medicamental treatment with arsenic in all inoperable cases of malignant lymphoma, and in certain ones of general sarcomatosis. Although many cases are not cured, some brilliant results have been obtained by this method.—*Beiträge zur klin. Chirurg. Mittheil. aus der Chir. Klinik zu Tübingen*. II. Bd. 1. Hft. IV.

II. Contributions to the Pathology of Tumors. By Prof. WILH. ZAHN (Geneva). (Continued from Vol. III., No. 1, p. 95 of this journal.

7. *Two Cases of Chondro-osteoid Sarcoma of the Thyroid Body.* Although malignant tumors of the thyroid gland were formerly believed to be very rare, they are at present more frequently observed, since attention has been directed to them. The author alone saw five cases of carcinoma in nine years' time. Sarcomata of the thyroid, however, are still very rare, and chondro-osteoid sarcomata have never yet

been described. The author, therefore, now publishes two such cases.

A. *Thyroidal chondo-osteoid sarcoma with embryonal transversely striated muscle-fibrillæ and pigment cells occurring in a human fœtus.*

Still-born infant, presenting at birth a tumor the size of a man's fist situated on the anterior aspect of the neck and reaching from the chin to the sternum and laterally to the right ear. The superficies was uneven; the consistency different in the various parts. The skin above it was bluish in places, not adherent to the tumor. The thymus and cervical glands were normal.

The tumor consisted of several large cysts, which were very soft on pressure; a membrane of connective tissue covered each prominence. The contents of the cysts consisted of an inspissated reddish fluid, microscopically consisting of small round cells (similar to those of lymphatic glands) and capillary vessels. No stroma. Injection of the tumor did not give satisfactory results.

The tumor enveloped the trachea, larynx and œsophagus, and occupied the place of the thyroid body. An isthmus could be made out joining the two portions of the tumor.

Microscopic examinations revealed various histological elements. Small round cells grouped together without any intercellular tissue formed the main constituent part of the tumor. Peripherally much perfectly formed, highly vascular connective tissue was seen; circumscribed and well-defined deposits of cartilage, both embryonal and osseous cartilage, were found in both portions of the tumor; and cavities lined with epithelia (embryonal thyroid tissue), in the shape of follicles and tubes. Groups of pigment cells and bundles of striated spindle-cells (embryonal muscle tissue) were also present.

The diagnosis made was one of foetal thyroid tumor originating from the branchial formations.

B. *Chondro-osteoid sarcoma of the thyroid body and lungs in a dog.* This tumor consisted in its peripheral portion of firm connective tissue, which extended in places into the center of the tumor. Between these extensions and enclosed in them was much calcified and uncalcified cartilage tissue. Both together formed a reticulum in the spaces of which small round cells and spindle-cells were seen. Secondary nod-

ules were also found in the lungs, the smaller of which proved to be sarcomata, the large ones, however, also contained hyaline and osteoid cartilage-tissue. An acquired mixed tumor was diagnosed, and the author points out how both these two tumors described are of special interest in regard to the question of formation of mixed tumors; the one being an example of teratoid mixed tumors, the other of organoid ones (Virchow), with a co-formation of various elements, or a transformation (metaplasia, Virchow) respectively.

8. *A case of papillary cylindro-cellular adenoma of the thyroid body in a dog.* A dog had suffered from a tumor of the neck, as large as a man's fist, and had died from compression of the trachea. The tumor showed a canalicular structure with ramifications. The vascular capsule consisted of fibrillary connective tissue. The trabecular structure was composed of blood-vessels, from which capillary loops proceeded, covered with cylinder-epithelia. In this manner papillæ were formed. The interstices were filled with fine granular masses, which resembled coagulated albumen.—*Deutsch. Zeitschr. f. Chir.* Bd. 23. Hft. 3, 4. March. 1836.

W. W. VAN ARSDALE, (New York).

III. The Extirpation of Tumors of Scarpa's Triangle.

By E. KIRMISSON, M.D., (Paris). This is a study of the topographical anatomy of the groin with especial relation to the removal of tumors. The greatest danger of operations here, rendering their performance very delicate, is the intimate relations between tumors and the great vessels of the groin. The ablation of superficial tumors, developed in the skin and subcutaneous connective tissue, is of but little interest, although the possibility that a superficial tumor may be found to have pushed out unsuspected deep prolongations, imposed upon the surgeon necessity for the greatest care even in apparently simple cases. In subaponeurotic tumors, the dissection should begin at their external face and extend inward, upward and downward, if necessary, so as to leave the tumor adherent only at the point corresponding to the sheath of the femoral vessels; then the dissection of the pedicle should follow. If the tumor is so large as to inconvenience the surgeon and hide the sheath of the vessels, which it is important for him to recognize both

with the finger and the eye, it may be removed in fractions, that portion which is the more particularly adherent to the vascular sheath being left in place. Not only should the pulsations of the artery be constantly under observation, but the plan followed by Denonvilliers, of first tracing the course of the vessel on the skin, in a case where the femoral artery was deviated, might be adopted. In the dissection of the adhesions of the tumor to the sheath of the vessels, three conditions may be found, giving rise to very different prognostic and therapeutic considerations. (1) It may be possible to destroy the adhesions completely, the femoral sheath remaining intact; (2) this sheath may be opened to a greater or less extent, and (3) in much the more serious cases it becomes necessary to involve the vascular walls in the operation by isolated section and ligature of the vein, or by resection and simultaneous ligature of the vein and artery. Simple denudation of the femoral vessels is of little gravity; in twelve cases of this kind death followed but twice and could not be attributed to the venous lesion. Moreover, denudation of the vessels may present two very different degrees; in the first the sheath is simply laid bare without being involved; in the second, a greater or less extent of the sheath is excised, and the walls of the vessels are directly exposed to contact with suppuration. In this case the chances of the development of sloughs in the vascular walls and of secondary hæmorrhage are evidently much greater. In a similar case the plan of Mosetig might be followed, who systematically incised the sheath of the vessels with the bistoury and the grooved director, separated each of the vessels from its normal position, and excised from between the two a large fragment of the neoplasm. When the femoral vein is involved, the prognosis becomes much more grave; of eight of this kind four were fatal. This result of lesion of the femoral vein will often be present, for the walls of the vein are infinitely less resistant to the invasion of neoplasms than the arterial; furthermore, most of the tumors, being glandular, are brought into closer relations with the vein than with the artery. In case of a wound of the vein, ligature of the corresponding artery would not control the hæmorrhage, while ligature of the vein itself, far from causing gangrene, is more

rarely followed by it than simultaneous ligature of the vein and artery, and should be adopted.

Coming finally to the cases in which ablation of the tumor necessitates resection and simultaneous ligature of the artery and the vein, it is observed that these cases are much more grave, since in seven cases collected, five terminated fatally; however, it would seem proper to make a distinction between the cases in which the resection and ligature are to be practiced above and below the origin of the profunda femoris vessels. In the middle of the thigh or in the popliteal space, simultaneous resection of the two principal vessels may be employed. In Scarpa's triangle, on the contrary, where the resection would much more frequently occur above the profunda vessels, this course exposes the limb to gangrene and cannot be recommended. If then careful examination of the patient shows the necessity of simultaneous resection of the artery and vein at the base of Scarpa's triangle, it would be best to abstain. However, it may occur that, during the operation itself, lesions may be recognized which the most careful examination had not been able to suspect; in these cases the extirpation may be left complete, or, relying upon certain fortunate cases in which ligature of both femoral vessels above the origin of the profunda vessels has been followed by recovery, resection may be adopted. It is a question of indications and contraindications, the solution of which will depend upon the age of the patient, his general condition and the state of the vascular system. The crural nerve and its branches are less exposed to injury by extirpation of tumors of the thigh than the vessels; cases are lacking to show the ulterior consequences of section of these nerves. The possibility of wounding the peritoneum in this space is noted, and the case of Eugene Bœckel, in which this occurred, the peritoneal wound being sutured with catgut, with recovery referred, to. The possibility of the existence of a femoral hernia below a neoplasm renders care desirable. Finally, the frequency of erysipelas after extirpation of tumors of the groin is remarked and attributed to the abundance of lymphatic vessels.—*Revue de Chirurgie*. 1886. May.

JAMES E. PILCHER (U. S. Army).

REVIEWS OF BOOKS.

ON THE SUPRA-PUBIC OPERATION OF OPENING THE BLADDER FOR THE STONE AND FOR TUMOURS. By Sir HENRY THOMPSON, F. R. C. S., etc., London. J. and A. Churchill, 11 New Burlington street. 1886. Pp. 57.

Sir Henry Thompson has the soul of an artist, and there is always a charm about the manner in which he treats any subject he may chance to deal with. As also he writes only on matters of which he has had an exceptional, often unique, experience, it goes without saying that any surgical book of his must be a valuable book to literature.

After a few preliminary observations Sir Henry deals with the supra-pubic operation in its historical, anatomical and practical aspects successively. He observes, incidentally, that the largest stone he has yet removed by lithotrity weighed $2\frac{3}{4}$ ounces (80 grammes). He adds: "I do not deny that even a larger size may be so extracted, but I do not say that it would be often prudent to undertake the task. Much depends upon the operator and his experience. Phosphatic calculi of still larger weight may be crushed successfully. But there is a limit which no man can define, even to the capability of modern lithotrity. There are calculi too large and too hard to be removed by that operation." There can be no question but that the less experienced the operator is in dealing with stone, the sooner will the limit of size and hardness be reached at which he ought to cut and not crush. As our author remarks, stones of large size ought not to exist in these days, but, so long as human nature is found in man, there will be patients whose timidity and procrastination will give calculi time to grow. It is not, therefore, entirely a question of improved surgical education.

Sir Henry now believes that in the hands of most operating surgeons supra-pubic lithotomy will prove a safer and a far easier operation than lithotrity for hard stones when they have arrived at about $1\frac{1}{2}$ to 2 ounces in weight.

The historical account deals with the work of Pierre Franco (1556), Rousset (1581), Hildanus (1680), Proby (1694), Douglas (1719), Cheselden (1723), Morand (1725), Heister (1739), Frère Come (1758),

and various surgeons of the present century, among whom may be especially mentioned for the value of their papers, G. M. Humphry, C. W. Dalles and E. Bouley.

A short description of the ordinary mode of operating concludes with a contrast of the relative risks of supra-pubic and perineal lithotomy by no means favorable to the latter. It is "beset with dangers," while there are but two chief risks in the former procedure, viz., (1) to the peritoneum; (2) infiltration of urine.

Now infiltration of urine is very rare, so that the only real risk is that of injury to the peritoneum. Modern researches, especially those of J. G. Garson (1877), have shown us how to ensure a safe supra-pubic interval in which to operate without endangering the peritoneum. Garson's memoir, describing the effect on the position of the bladder of distending the rectum, and especially calling attention to its bearing on the operation of supra-pubic lithotomy, was read at the Congress of German Surgeons on April 12, 1878. "Professor Petersen, of Kiel, was present, and there is little doubt that he was thus led to test by practice the theoretical question of the abundant space in this manner obtained for the high operation, then raised by Garson." Petersen's paper (1880), his methods and results are there outlined, and Guyon's account of eight cases noted. Sir Henry Thompson's first case was in 1883, and, last November, he completed his eighth.

After no other previous preparation than emptying the bladder, the patient is anesthetized in the supine position, with the head and shoulders slightly raised. An empty india-rubber bag rolled into a cone and well vaselined is passed well into the rectum completely above the sphincter. Then about twelve or fourteen ounces of water are gently thrown into the rectal bag, in the case of an adult.

Thompson next injects through a flexible catheter, slowly and gently 6, 8 or 10 ounces, feeling his way carefully according to the resistance perceived in the act, and the degree of eminence observed above the pubes, almost invariably obvious to the eye as well as to the hand, taking care to avoid the application of force. "The rectal distension is essential, the vesical need not be considerable." The fluid used should be a mild antiseptic solution, such as one of boracic acid. The catheter being withdrawn, the base of the penis is firmly ligatured with an india-rubber tube. Palpation above the symphysis now demonstrates the position of the bladder, most of it lying above the brim of the pelvis in the form of a rounded ball. There is little to be noted about the author's method of reaching the bladder through an ordinary median incision about 3 inches long, other than that he uses the index finger-nail instead of the knife, except in dividing the skin, the aponeu-

rosis and the fascia transversalis. A small hook fixes the bladder, while it is cut enough to admit the right index finger. The left index is afterwards insinuated in beside the right, and an opening of sufficient size made by gently separating the two fingers to a sufficient extent, "thus avoiding the knife, and with it, sometimes troublesome hæmorrhage." When operating for tumor, our author passes a loop of stout silk through each margin of the vesical opening and hands each loop to an assistant who holds it up.

Instead of forceps, he extracts the stone with his two index fingers, applying them separately like the separate blades of a midwifery forceps. No suture is placed in the bladder, and only one about an inch below the upper angle through the abdominal walls. He leaves five or six inches of large india-rubber tube for the first twenty-four or forty-eight hours" to ensure a free opening in case of hæmorrhage, and sometimes, also, a full-sized catheter in the urethra.

The patient has generally been relieved by the removal of these in two or three days, sometimes sooner. He lies on his back the first 24 hours, and then on each side alternately for six hours at a time, and all the urine runs easily in this way from the wound, and excoriation of the skin is prevented by one side only being wetted for that short period at a time. "No other dressing than layers of lint soaked in weak carbolic acid solution, or in one of boracic acid, has ever been employed by" Sir Henry Thompson.

One patient, æt. 73, died "of sheer exhaustion" on the ninth day. Each of the others made a good recovery. In getting down to the bladder, the author has lately, for convenience sake, used an ivory "separator" instead of the finger-nail.

When the patient is a female or the bladder has been already opened from the perinæum, that viscus cannot be kept distended with fluid and has therefore to be opened on a sound. As soon as the opening has been thus made it has often happened in former times that the bladder has slipped away, and the surgeon has perhaps torn its connections a good deal in the endeavor to get his finger into it. Thompson describes a special hollow sound to obviate this. Its extremity is open obliquely, and when it reaches the wall of the bladder, a hook is thrust into it through the vesical wall, the latter being thus secured before it is opened.

We find it difficult to believe that, given a sufficiently sharp hook and a deliberate, careful surgeon, any special form of sound can be required to assist in fixing the bladder, nor can we think that Sir Henry's "ivory separator" is really much more useful than the handle of an ordinary scalpel. It is to be regretted, therefore, that he has apparently

made an attempt to encumber surgery with two more instruments.

The author estimates highly the probable value of the supra-pubic operation as a means of removing vesical tumors. In addition to its freedom from hæmorrhage it permits a somewhat more extended use of the sense of touch than is practicable by the perineal incision; and it adds thereto the ability to see to a certain extent, conferring also an opportunity to apply the cautery or styptics.

The book concludes by the recital of eight cases. Whoever proposes to do the supra-pubic operation for the first time cannot do better than study it with care. He will find the task no unpleasant one. Whoever is practically acquainted with the operation will take a natural interest in the able, thoughtful and graphic narrative of one who has been over the same ground himself.

C. B. KEETLEY.

PRACTICAL NOTES ON THE TREATMENT OF DEFORMITIES. By HENRY F. BAKER, F.R.C.S. (Edin), Assistant Surgeon (late house-surgeon) to the Royal Orthopædic Hospital, etc., etc. London, Ed. Stanford, 1886. Pp. 71.

This book describes nothing new and destroys nothing old, and yet it is a genuine contribution to orthopædic surgery. Its value is due to the fact that it is an honest, clear and short description of the practice at the largest, and, we believe, the oldest orthopædic institution in England, an institution well known throughout the world in association with a majority of the most renowned British names in that branch of surgery.

There is but little pathology in the book, and what there is is mainly fanciful. Mr. Baker can scarcely be blamed for this. He accepts, with an evident modesty and ingenuousness, the theories of the school whose practice he follows, theories evolved from their own moral consciousness by surgeons so profoundly satisfied with the results of their treatment that they almost uniformly deduced their notions of pathology from their notions of treatment; and naturally disfigured their books with gross misstatements, scarcely to be paralleled in any other department of surgical literature. Tenotomising for everything, everything is, with them, of muscular origin. Mr. Baker is so far carried away by this idea that he begins his book with the suggestion that "relapsed" cases of club-foot owe the difficulty of dealing with them to the fact that the tendons have not been properly divided and have formed adhesions. We should greatly like to see the proofs of this statement, which appears to us to be without foundation. If he had

written that so-called "relapsed" cases of club-foot, and of some other deformities, especially genu valgum, had never been cured at all, not even when they had been treated at the Royal Orthopædic Hospital, he would have been much nearer the mark. In most of such cases, the imaginary cure consists in hiding one deformity by the addition of another, and when nature has had time to remove the latter, the original (older and more obstinate) reappears and a relapse is said to occur. This is a statement the proofs of which stare everybody in the face, and are invisible only to the "muscular" school of orthopædic pathologists. In illustration of the almost comic light in which this school view certain things, take the following two sentences from pp. 43 and 68 of this book respectively. "In extreme cases of genu valgum in adults osteotomy may be necessary," (in *extreme* cases,—*may* be necessary!). "If the progress of the case continue unchecked, the intervertebral cartilages become compressed on the side corresponding to the concavity of the curve." That's all! Who would suspect from this that the bodies of the vertebræ alter in shape more quickly and more seriously than the cartilages, and that no one has ever yet demonstrated a scoliotic spine, however incipient the curvature, in which the wedge-shaped change in the bodies did not exist?

However, in spite of these strictures on the faulty side of the book, it has great merits, both negative and positive. It does not contain a single ill-natured word, and is entirely free from those absurd and impertinent suggestions of orthopædic incompetence in general surgeons, which swarm in certain books I should name if naming would not too well serve their authors' main purpose, namely, advertisement. The style is clear and unaffected. But the chief value of the work is due to the fact that it is a practical account of the favorite methods of an able man who has been for a period of no less than ten years resident surgeon at a great metropolitan orthopædic hospital, and who, moreover, had an exceptionally sound and practical training in general medicine and surgery before that period.

C. B. KEETLEY.

SURGICAL DISEASES OF THE KIDNEY. By MR. HENRY MORRIS. London: Cassell. 1885.

The present progress of surgery is nowhere so much observable as in the appearance of works which deal with the surgical treatment of those regions, which have only recently come under the hand of the surgeon, and the above named work is well worthy of perusal.

A somewhat large proportion of the book is devoted to the consid-

eration of the anatomy of the kidney, including its malformations. Unfortunately, notwithstanding the fact that many attempts have been made and rules laid down for the detection of the presence of a single kidney, there is no record of a correct diagnosis having been arrived at until after death. It does not even appear to be certain, as Mr. Morris asserts, that abnormalities of the generative organs are in any way connected with those of the kidney.

The question of injuries of the kidney is then fully considered, and the formation of blood cysts in connection with it, and it is pleasant to observe that the term traumatic hydronephrosis which has been somewhat unhappily applied to such conditions, does not find place in the book before us.

On the subject of renal calculus Mr. Morris is most explicit in the principles on which he insists, and on the differences which he lays down between the modern operation of nephrolithotomy, and the incision of the kidney to relieve an abscess which has been produced by the irritation of a calculus. "Nephrolithotomy," he says, "therefore, is the operation for stone in the kidney. Nephrotomy is the operation for calculous pyelitis, or calculous hydronephrosis, or pyonephrosis," etc. Now, whilst fully endorsing these remarks, we confess it is a little arbitrary to deny the term nephrolithotomy to a case because some pus is present, when it is admitted that the stone was the cause of the pus, and that its removal relieved the patient of pyuria, if it did not leave him with an uninjured kidney.

The surgical treatment of kidney tumors is but little referred to, probably because the author feels he is treading on debatable ground, and is unable to advise in many cases their removal by any surgical operation.

In conclusion we can cordially recommend this book to our readers as giving an excellent résumé of the present state of our knowledge on the subject.

W. BRUCE CLARKE.

RECENT GERMAN SURGICAL PUBLICATIONS.

- I. VERHANDLUNGEN DER DEUTSCHEN GESELLSCHAFT FÜR CHIRURGIE. VIERZEHNTER CONGRESS, abgehalten zu Berlin, vom 8-11. April, 1885. mit 13 Tafeln, Abbildungen und Holzschnitten. Berlin, 1885. Verlag von Aug. Hirschwald. New York, G. E. Stechert. (*Proceedings of the German Surgical Association*, held at Berlin, April 8-11, 1885. With 13 tables, illustrations and wood-cuts.

2. BEITRAEGE ZUR KLINISCHEN CHIRURGIE. Mittheilungen aus der chirurgischen Klinik zu Tübingen. Herausgegeben von Dr. PAUL BRUNS. Zweiter Band. Erstes Heft. Tübingen, 1886. H. Laupp. New York, G. E. Stechert. (*Contributions to Clinical Surgery. Reports from the Surgical Clinic of Tübingen.* Edited by Dr. Paul Bruns. 2d Vol. Part 1).
3. ARBEITEN AUS DER CHIRURGISCHEN KLINIK DER KOENIGLICHEN UNIVERSITAET BERLIN. Herausgegeben von Dr. ERNST VON BERGMANN. Erster Theil. Mit Vier Tafeln. Berlin, 1886. Aug. Hirschwald. New York, G. E. Stechert. (*Contributions from the Surgical Clinic of the Royal University of Berlin.* Edited by Dr. Ernst von Bergmann. Part 1. With four plates).
4. MITTHEILUNGEN AUS DEM KOELNER BURGER HOSPITAL. Herausgegeben von Oberarzt Prof. Dr. BARDENHEUER. Erstes Heft: Osteoplastische Resection des Manubrium Sterni. Mit zehn Tafeln in Lichtdruck. Köln und Leipzig, Albert Ahn, 1886. New York, G. E. Stechert. (*Reports from the Municipal Hospital in Cologne.* Edited by Prof. Bardenheuer, chief surgeon.
First part: *Osteoplastic resection of the manubrium sterni.*
5. DIE KRANKHEITEN DER VAGINA. Von Dr. A. BREISKY, O. O. Professor der Geburtshülfe und Gynäkologie an der Deutschen Universität zu Prag. Mit 47 Holzschnitten. Pp. XVIII-205. (*Diseases of the Vagina.* By Dr. A. Breisky, Professor of Obstetrics and Gynæcology at the German University at Prague. With 47 wood cuts).
6. DIE LEHRE VON DEN KNOCHENBRUECHEN. Von Dr. PAUL BRUNS, Professor in Tübingen. Mit 239 Holzschnitten. Zweite Hälfte. Pp. XLVI, 410-630. (*Treatise on Fractures.* By Dr. Paul Bruns, Professor at Tübingen. With 239 wood-cuts. Second half).
7. MILZERBRAND UND RAUSCHBRAND, Bearbeiten von WILHELM KOCH. Mit 8 in den Text gedruckten Holzschnitten und 2 lithographischen Tafeln. Pp. XXIV-154. (*Splenic Fever and Glanders.* By Dr. William Koch. With 8 wood-cuts incorporated with the text, and 2 lithographs).
8. VERLETZUNGEN UND CHIRURGISCHE KRANKHEITEN DES GESICHTS. Von Prof. Dr. TRENDLENBURG. Mit 30 Holzschnitten und 5 Lithographirten Tafeln. Erste Hälfte. Pp. 194. (*Injuries and Surgical Diseases of the Face.* By Prof. Trendelenburg. With 8 wood-cuts and 5 lithographed plates. First half).

9. DIE VERLETZUNGEN DER OBEREN EXTREMITÄTEN. Von Dr. BERNARD BARDENHEUER, Oberarzt am Kölner Bürgerhospital. Erster Theil. Mit 196 abbildungen im Text. Pp. XXVIII-738. (*Injuries of the Upper Extremities.* By Dr. Bernard Bardenheuer, Surgeon-in-chief to the Cologne Municipal Hospital. First part. With 196 illustrations in the text).
10. DIE CHIRURGISCHE ANATOMIE IN IHRER BEZIEHUNG ZUR CHIRURGISCHEN DIAGNOSTIK, PATHOLOGIE UND THERAPIE. Von Prof. Dr. Max Schuller in Berlin. Heft. I. Die obere Extremität. Berlin, Georg Reimer, 1885. New York, G. E. Stechert. *Surgical anatomy in its relation to surgical diagnosis, pathology and therapeutics.* Part I. The Upper extremity. By Prof. Max Schüller, of Berlin.
11. HANDBUCH DER KRIEGSCHIRURGISCHEN TECHNIK. Eile gekrönte Preisschrift von Dr. FRIEDERICH ESMARCH. Kiel, Lipsius & Tischer, 1885. New York, G. E. Stechert. *Manual of the technique of military Surgery*, by Friedrich Esmarch, of Kiel, receiving the German Empress' prize at the Vienna International Exhibition. Third edition. 647 wood-cuts.
12. COMPENDIUM DER LEHRE VON DEN FRISCHEN TRAUMATISCHEN LUXATIONEN, für Studierende und Aertze, von Dr. STETTER. Berlin, Georg Reimer, 1886. New York, G. E. Stechert. *A Compend of Instruction in Recent Traumatic Dislocations*, by Dr. Stetter).

1. The report of the Fourteenth Congress of German Surgeons, which has taken some time in preparing, contains, in uniform arrangement with the former ones, a full report of the papers read at the congress together with the discussions following, all given verbatim, and matter relating to the business aspect of the congress, including a catalogue of members, etc. It surpasses its predecessors in volume, containing 543 pages of printed matter, besides a number of handsome plates. The subject-matter has been reported in due season in the ANNALS OF SURGERY.

2. This second volume contains further essays of surgical interest from members of the Surgical Clinic of Tübingen.

Prof. Bruns was one of the first directors of German Clinics, who preferred editing the essays originating in his clinic in book form to publishing them in the extant periodicals. Whether they are as universally read and widely circulated as they would be in the periodicals, is questionable.

We subjoin a list of contents referring our readers to the separate notices in our *Index of Surgical Progress* for more special information.

P. Bruns, on cases of sudden death after fractures of bones, resulting from venous thrombosis and embolism.

E. Müller, on the behavior of the bodily temperature in subcutaneous fractures.

O. Habermaas, on tuberculosis of the mammary gland and some other rare cases of surgical tuberculosis.

Eugen Müller, on the intracapsular extirpation of thyroid cysts.

F. Köbel, on the arsenical treatment of malignant tumors.

A. Wörner, on the final results of the operation for labial cancer.

3. This volume contains a number of essays all originating from the Berlin Surgical Clinic, some of which have been previously published in the *Archiv für klinische Chirurgie* and the *Berliner klinische Wochenschrift*; and have been noticed in the *Index of Surgical Progress* in the ANNALS under their proper headings.

Two articles are from the pen of Prof. von Bergmann himself, one on traumatic compression of the brain and one on extirpation of the kidney.

Two papers are by Fehleisen, on displacement of the bladder by tamponade of the rectum; and on exostosis bursata respectively, while F. Grimm writes on chyluria and E. Scheuerlen on suppuration by means of chemical irritants. An elaborate treatise upon arterio-venous aneurysm by F. Bramann, over 100 pages in length, is included, which had been already reported in a condensed form in the *Archiv für klin. Chirurgie*.

For those who do not subscribe to the periodicals mentioned, this book will prove a handy addition to their library, containing, as it does, papers by the highest German authorities on the respective subjects.

4. This pamphlet contains the first of a series of essays from the pens of Prof. Bardenheuer and his assistants, which are to be edited in book-form, for the reason that they are too voluminous to be printed in the periodicals. Among the nine subjects announced as ready for publication in this series we notice "Transverse Exsection of the Tarsal Bones," "Resection of the Epididymis for Tuberculous Testicle," "Extirpation of Kidney," "Cholecystotomy" and "Operative Treatment of Caries of Anterior Portion of Sacral Bone." The author's well-known participation in preparing Billroth and Lücke's "Deutsche Chirurgie" has heretofore prevented him from giving these articles to the public.

The pamphlet under consideration is about 80 pages in length and treats of the indications and the modes of performing the operation of resection of the upper portions of the sternum.

The indications are given when the innominate artery, the first part of the subclavian or the intra-thoracic part of the carotid is to be ligated.

This may become necessary for injuries to the arteries, for traumatic or spurious aneurisms, or for retro-sternal tumors involving the arteries.

Further indications are represented by tumors situated behind the sternum and requiring removal; by similarly situated abscesses, by diseases of the sternum proper, requiring its removal, and by the necessity of performing tracheotomy when the trachea is not approachable above the sternum, as in cases of malignant inoperable tumor of the thyroid.

In the second half of the paper the author details the various operations mentioned from a technical point of view, adding anatomical notes wherever necessary.

Descriptions are given of Graefe's, Pirogoff's and Mott's manner of operating for ligation of the innominate, and the author's own method is detailed at length with references to cases. After making two long incisions through the skin at right angles to each other and crossing at the upper margin of the manubrium sterni, and duly elevating the periosteum, he saws through the right clavicle and the first two ribs 3 or 4 cm. from the sternal articulations, and, raising them up, advances between the posterior periosteum of these bones and the sternum respectively, until he can, by chiseling through the sternum, take out its whole upper portion. The sternal articulations of the corresponding bones of the left side are excised. The periosteum remaining is then incised, and thus access gained to the parts underneath:

In a similar manner the operations for ligating the subclavian artery, and for the other indications mentioned are given, and cases, illustrated by handsome phototypes, are added.

The author does not believe the operation to be too difficult of performance or to demand too much time for execution, if the surgeon have previously practised it.

The obvious objection to the operation, that the danger incurred by laying open the mediastinum, and the danger of wounding the pleura, the large veins of this region, the thoracic duct, etc. is too great, is met by the assertion that the removal of the sternum in point of fact facilitates the operation by permitting free access to these parts, and that it therefore reduces the danger. The after-treatment of the wound,

moreover, may be much more safely conducted by plugging the entire cavity with thymol gauze after removal of the sternum, and better drainage thus ensured than is possible in retrosternal operations. The cavity closes rapidly by granulation. The sternum and portions of the clavicles which have been removed, are reproduced by the periosteum, although of slighter proportions, and narrowing of the chest and scoliosis results.

W. W. VAN ARSDALE.

Numbers 5 to 10 are all monographs belonging to Billroth and Lücke's *Deutsche Chirurgie* (Stuttgart, F. Enke, 1886), and are respectively numbers 60, 27, 9, 33 and 63 of that encyclopædia.

5. With Prof. Breisky's work surgeons are already familiar, since it originally appeared in the "Handbuch der Frauenkrankheiten." We note in the present edition the addition of fifty pages of new matter, as well as an exhaustive bibliography, which shows that the learned author has made a careful study of American and English as well as French and German authorities. Prof. Breisky is well known as one of the few German admirers of American gynecology, which fact ought to make his book a popular one among us.

The arrangement of the present volume shows a marked improvement over the former one, while the copious foot-notes renders it exceedingly valuable for purposes of reference.

Chapter III, on atresia and stenosis of the vagina, has been recast and now concludes with a carefully prepared table of the author's own cases, eighteen in number, all of which terminated fortunately. The following chapter; on prolapse of the vagina, is less satisfactory, especially the paragraphs referring to operative treatment.

Chapter VII in the old edition is now chapter IX. Chapter VII (pages 101-145), treating of inflammation of the vagina, is new, as are the accompanying wood-cuts (Figures 27 to 32 inclusive), from Ruge and Chiari. The latter, with the exception of Fig. 32, are unfortunately rather indistinct. The subject of vaginitis is ably treated under the following subdivisions:

1. The catarrhal inflammations, including acute catarrh, follicular, vesicular, emphysematous and exfoliative vaginitis.
2. The exudative inflammations (vaginitis diphtheritica, dysenterica, erysipelatosa and septica).
3. Peri-vaginal inflammation and abscess. The chapter concludes with photographs on syphilitic and tuberculous ulceration, gangrene and *ulcus rotundum vaginae*.

Some of these sub-varieties may appear to the English reader to be forced, but the author's careful descriptions prove that he records the results of his own observations.

Chapter VIII, "New Growths in the Vagina," (formerly chapter IX, consisting of 25 pages), includes pages 145-180, and is exhaustive. We are glad to note the omission of the old figure 31, which was most displeasing to the eye.

The concluding chapter on fistulæ, formerly the eighth, has been remodeled, especially the descriptions of operations. The paragraphs on recto-vaginal fistula show that the author has not failed to be influenced by Emmet's teachings. The section on entero-vaginal fistulæ has been thoroughly modernized in its essential features.

In concluding this hasty examination of a scholarly work we would again call attention to the thoroughness of the revision; to the improved arrangement of the subject-matter and to the great value of the collected bibliography. The absence of an index is to be deplored.

6. Prof. Bruns prefaces the second half of his monograph with upwards of thirty pages of references, which can not fail to awaken the admiration of the surgical reader

Continuing the subject of the after-treatment after consolidation of fractures, the author considers on the opening page (401) the possible complications which may arise at this period, especially œdema, muscular atrophy, paralysis and contracture, and stiffness of the joints. Chapter VI is entitled "The Indications for Amputation and Resection of Joints in Fractures." Dr. Bruns lays down the positive rule, that aside from complete crushing of a limb, where gangrene is inevitable, primary amputation is clearly indicated only in those cases "in which there is but a remote possibility of healing under conservative treatment" (P. 409). On another page (410) he repeats and emphasizes his previous opinion that "*no compound fracture by itself no matter how extensive the comminution, is an indication for primary amputation, but only an accompanying irreparable destruction of the soft parts.*"

The seventh section, treats of the immediate and subsequent complications of fractures and their treatment and concludes the subject.

7. Dr. Koch's work will possess more interest for the veterinary surgeon. With the exception of about twenty pages, it is devoted to splenic fever, which affection is discussed most thoroughly.

Particular attention is paid to the pathological anatomy; the bacteriology receives due mention, and is illustrated by a fair lithograph. The bibliography is copious.

8. The first part of Prof. Trendelenburg's monograph on facial injuries and diseases promises only fairly. It contains five chapters (the

first and the fifth should really be combined) which treat respectively of congenital deformities, wounds and other injuries of the face, inflammatory swellings, new growths and failures of development.

Under chapter I are included failures of development of the frontal process (hare-lip and cleft palate) and of the upper branchial arch with the operations for their cure. There is nothing particularly new in this portion of the book, although it is fully up to date. The chapter on wounds and injuries, (stabs contusions, burns and frost-bite) is brief and rather more superficial than the reader would expect in a monograph; the same may be said of chapter III. in which brief paragraphs are devoted to such important matters as anthrax erysipelas and the syphilides; to furuncle, noma and lupus are allowed three pages each.

Chapter IV, on new growths (including pages 74 to 139) is more extended. Macroglossia is (rather curiously) described at length under this chapter, the author regarding it as a "congenital lymphangioma of the tongue." Fifty pages are given to angioma, the subject being well covered. The interesting keloid growths which develop on the lobe of the ear are described and figured (pages 107-109) also dermoid cysts and the sarcomata (page 109). Epithelioma, of course, claims the larger part of this chapter (27 pages). and the section in which it is discussed is, in the main, satisfactory, although there are too many tables of statistics, and too little about treatment. Theories regarding the etiology of the disease occupy nearly one-half of the section. Chapter V, entitled "Defects and Failures of Development of the Face, Plastic Operations," forms the concluding topic, and is more carefully elaborated than those which precede it. The first section is introductory, and treats of plastic operations in general, the different forms and methods of obtaining skin-flaps, etc.; the second is devoted to rhinoplasty (pages 153-176), the third to cheiloplasty, the three concluding sections to melo-blepharo and otoplasty. The operations are described briefly, but in a manner sufficiently clear to the surgical reader; the illustrations are, unfortunately, few in number, and not always of the newest. The plates at the end of the volume, illustrating various forms of facial disease and deformity are very good. There is neither a table of contents nor a bibliography in the book, but doubtless these will be supplied in the second part, for the appearance of which we should wait before passing judgment upon the character of the work. As far as it has gone, we venture the criticism that it is rather disappointing, as compared with most of the monographs which have preceded it, in that it is uneven and incomplete in some portions. While one or two of the chapters are thorough and exhaustive, others are

abridged to an extent that would not be expected in a special treatise.

9. We are compelled to pass in hasty review the first volume of Dr. Bardenheuer's work, which, when completed, will be what the Germans call "kolossal." We can give but a very imperfect idea of it here. Of the fourteen chapters in Part I, the first deals with general questions of anatomy, pathology and diagnosis, the next two with fractures of the clavicle and scapula and dislocations of the former bone, the fourth, fifth and sixth with fractures and dislocations of the humerus; the two succeeding chapters treat of injuries of the axillary and subclavian arteries and brachial plexus, the next of traumatic inflammation of the shoulder-joint. Chapter X describes the different methods of exarticulating and amputating the humerus. Chapter XI, injuries of the muscles, nerves and blood-vessels of the upper arm. The three concluding chapters are devoted to injuries and operations around the elbow-joint. Considering the limited field of this bulky volume, the reader will at once infer that each topic is considered with true German thoroughness, and such is indeed the fact. Yet there is no tendency on the part of the author to indulge in useless details. His style is frequently epigrammatic; each paragraph is complete in itself. Statistics are introduced where they are needed, but always in a condensed form, elaborate tables being omitted. The drawings are numerous and good; many of them will be quite new to readers of English works.

It is unnecessary to analyze each chapter in detail; a brief review of one will serve to indicate their general arrangement. The anatomy of the special injury is first described, followed by the etiology, symptomatology, diagnosis, prognosis and treatment; each section is preceded by a brief historical sketch. The principal points in the diagnosis and differential diagnosis are stated in as few words as possible, and rather with the view of furnishing practical hints for the surgeon than of displaying well-rounded periods.

The chapters on operations (X, XI and XIII) are, of course briefer than in works on operative surgery, but they are quite comprehensive. The anatomy and surgery of the subclavian arteries are thoroughly presented in chapter VII. It would be unjust to the author of such an elaborate treatise to judge of the character of his work from this hasty notice. It is worth a careful perusal, and will certainly find a worthy place among surgical monographs. It is marked throughout by the two cardinal virtues in an author—clearness and brevity. The impression left after a careful perusal is this—that Prof. Bardenheuer has written from his own experience and at the same time with an honest desire to give every man the credit of his work without regard to his

nationality. When it is completed, it will not be easy to find a rival for such a monument of patient industry. H. C. COE.

10. The anatomy of the human body is treated from a somewhat broader point of view in this work of the well-known German surgeon, than is usually customary in topographical and so-called surgical anatomies, and throughout the first volume now before us abundant evidence is easily detected even at a cursory glance, of that thoroughness, both in original research and in the acquaintance with others' observations, which has marked the author's previous writings, and to which he deservedly owes his reputation.

The reader is supposed to have a complete knowledge of descriptive anatomy and a fair idea of the topographical relation of the parts as well as a general knowledge of pathology and the surgical treatment of diseases and injuries.

Presuming upon such knowledge, the author professes to guide the reader in the examination of the living healthy subject and the normal cadaver, and to point out the parts dissected in the one through the uninjured integument of the other, as well as to give him hints and directions in producing pathological conditions in the cadaver resembling those frequently occurring in surgical practice, and aiding him in their diagnosis and treatment.

In the present volume the author first describes the external aspect of the upper extremity from a surgical point of view, as it relates to inspection and palpation, and enumerates the deeper seated parts as they can be made out by the sense of touch, as well as the topographical situation of such ones as cannot be felt, and the points for reaching them by incision. He considers all these things as they vary under the influence of movements, disease and injuries.

In the anatomical descriptions of the parts the author has taken special care to explain the forms and relations of the lymph-spaces and serous cavities, employing injections of the intermuscular spaces, joints and tendon-sheaths to demonstrate his statements. Original experiments and deductions from them are likewise especially noticeable under the headings of the various forms of dislocations: and in the treatment of the subject of injuries to the larger vessels frequent allusions to special experiments are to be found.

The subject-matter has thus become quite extensive, and in this first part of the work, treating only of the upper extremity, 370 large octavo pages are contained.

The work contains in a readily accessible form much information which surgeons, especially those who have been instructors as well as operators, have hitherto had to look up in monographs and periodical literature; and for this reason alone, even without consideration of such original matter, as of itself attests the worth of the book, it will prove a very valuable addition to the library of all readers of German.

11. The third edition of Esmarch's Military Surgery will be wel-

comed by the public with the more pleasure, as it has been awaited for so long a time. The first two editions were already out of print in the year 1881, the book proving a great favorite, and owing to the failure in business of the original publishers, the reappearance of the book has been delayed till now.

The book is so well known that a mention of its contents appears superfluous.

The third edition bears evidence of several alterations. It appears in two volumes, the first containing the subjects of wound-dressing and bandaging; the second operative surgery.

The antiseptic method is given more prominence than before; directions are included for preparing antiseptic dressing material, and for the disinfection of septic wounds.

In the second volume numerous additions have been made. Chapters, such as the one on suture of the intestine, have been extended so as to comprise recent methods (as Czerny's suture), and other chapters have been inserted, as the ones on resection of ribs and on the osteoplastic resection of the tarsus after Mikulicz-Wladimirow.

The book now appears in small octavo and the type is smaller, which rather detracts from its elegance, although it may lessen its cost. The handsome chromo-lithographs of the first edition have also been omitted and replaced to some extent by wood-cuts. This applies to the transverse sections of the limbs, and to the operations of ligating the arteries.

In the latter the surrounding portions of the limb have been omitted, which so well served to impress the localization of the vessels upon the mind of the reader, and enabled him more easily to find his place. The wood-cuts are well executed, but the differentiation of the vessels by shading does not compare in distinctness to the former coloring. Several new woodcuts representing the course of the main arteries are added.

12. This is a concisely written, handsomely-published hand-book of about 120 pages intended for the use of students, and giving in few words the mechanical pathology, symptoms, diagnosis and treatment of dislocations occurring in the daily surgical practice—one of a class of books not very frequently met with in German medical literature on account of its eminently practical character.

Luxation of the spinal vertebræ is somewhat quickly disposed of, the author stating that local symptoms are frequently not well marked, and the nervous symptoms *not practically available* for diagnosis.

Other forms of luxation, however, such as that of the elbow, appear treated with perspicacity and at sufficient length.

The author, being instructor in surgical bandaging at the University of Koenigsberg, intended the volume as a hand-book for the use of his students. The purpose is evidently adequately attained.

W. W. VAN ARSDALE.

EXCISION OF THE BONES OF THE TARSUS FOR
TUBERCULAR DISEASE, WITH REPORT OF
A CASE IN WHICH EXTENSIVE EXCI-
SION OF THE TARSUS WAS PER-
FORMED IN BOTH FEET.¹

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FORMERLY when a case of tuberculous disease of the bones of the feet presented itself for treatment the only resource was amputation, but with the advent of antiseptic surgery and the establishment of conservative principles of treatment, other methods of procedure have been adopted with success. In cases of tuberculous and carious disease of the bones of the foot the necessity for amputation is not immediate, and it is the duty of the surgeon to endeavor first to remove the local disease before sacrificing the extremity. In diseases, for instance, of the tarso-metatarsal articulation only the diseased parts of the bones entering into this articulation should be removed, and the same may be said of the tarsal and ankle joints. The principle I wish to advocate in these cases of tuberculous disease of the bones of the foot is not a new one, but one that is not sufficiently insisted on. It is this, viz., that it is not always necessary to remove a definite portion of the foot by a Hey's Chopart's or Syme's amputation, even when the disease is very extensive; on the contrary, the diseased parts should be cut down upon wherever they exist, and only the bones affected with disease should be removed. The removal of the disease, however, should be thorough, and it is

¹Read before the Surgical Section of the Canada Medical Association, Quebec, August 18, 1886.

better to remove too much than too little, as the more complete the removal the more rapid the cure.¹

I have several times performed partial excision of the tarsus and ankle joint with the best results. In children the necessity for amputation rarely occurs, removal of the disease by scraping and gouging being nearly always sufficient. The following case illustrates this: A. B., æt. 3 years, a delicate child with a strumous history, had for some time complained of a sore foot, and latterly had walked lame. When seen, April, 1884, there was a small fluctuating swelling over the scaphoid bone of the left foot, the whole foot was enlarged and inflamed. The swelling was incised and a quantity of thin curdy pus let out. On passing in a probe carious bone was felt. The child was immediately put under ether, and the carious portions which involved the scaphoid and cuneiform bones was thoroughly scraped out with a Volkmann's spoon. The cavity was afterwards stuffed with iodoform gauze and the foot dressed with sublimate jute. In the course of a couple of months the cavity had completely filled up, and soon afterwards the child was running about as actively as ever. Now, in this case, had the disease been allowed to go on, the whole tarsus would have been involved, and a much more serious operation would have had to have been undertaken. Up to the present time there has been no return of the disease. The next case I shall relate is one of extensive disease of both feet in a young girl, æt. 17. In one foot excision of ankle joint and tarsus was performed, and in the other partial excision of tarsus.

Mary T., æt. 17, a delicate looking girl, was admitted into the Montreal General Hospital, May 27, 1885, for disease of both feet.

No distinct history of phthisis or scrofula in the family, but some of relations died of "lung disease."

Patient up to one year ago had always enjoyed good health, when she noticed that both feet were commencing to swell. The swelling in the right one was over the ankle, that in the left over the dorsum of

¹Dr. Conner in an exhaustive paper in Vol. I of the Transactions of the American Surgical Association reports two cases of excision of the entire tarsus; the patients recovered with useful feet. In the same paper he gives a table of 108 cases of excision of two or more bones of the tarsus.

foot. The swellings "broke" some eight months ago, and have been discharging ever since. Had not walked for the last two months. On examination several sinuses were seen in each foot; in the left, they were situated below the internal malleolus and led down to the carious bones; in the right several were situated over the tarso-metatarsal joint on the dorsum of the foot, and one was seen in middle of sole of foot. Both feet were much swollen, and could not bear pressure without pain. Movements of left ankle joint exceedingly painful, but no roughness felt in movement. It was decided to remove the diseased portions of left foot first. On June 1 the patient was etherized, and an incision made below the tip of internal malleolus from the tendo Achillis downwards along the inner border of the foot in the course of the discharging sinuses. Bare bone was soon reached and several sequestra removed, the cavity was gouged out with a Volkmann's spoon and afterwards stuffed with iodoform gauze. A jute pad was then applied, which was sufficiently firm when covered with antiseptic bandage to keep the foot in proper position. The dressings were removed once a week, and for a time the patient markedly improved, but later it was found that all the disease had not been removed, that carious action was still going on, and that suppuration was more profuse than it ought to have been. On the 15th of August, 1885, patient was again etherized and an incision made in the same line as the former one and the parts more freely exposed. It was found that the ankle joint was involved, and that there was disease also of scaphoid and cuboid bones. The astragalus had an abscess the size of a filbert in its centre. I removed the lower end of the tibia, astragalus, part of cuboid, external cuneiform, scaphoid, and a portion of the os calcis, but left the external malleolus which was apparently healthy. The wound was dressed as before with iodoform gauze and jute pads. A drainage tube was also passed through the cavity, emerging beneath the external malleolus. The patient did remarkably well, rarely having a temperature over 100° F. The dressings were changed about once in ten days or two weeks, as required.

In September, owing to the prevalence of small-pox in the city, all the patients in the hospital were vaccinated, this one amongst the rest. She got a severe attack of erysipelas on the arm and had to be removed to the infectious ward, and after recovery, not wishing her to re-enter the surgical wards, and she being much pulled down by the attack of erysipelas, I advised her to go home to the country for the winter and come back in the spring to have the other foot attended to. When she left the hospital the cavity in the left foot had entirely

healed with the exception of a small fistulous opening below the site of the internal malleolus.



FIG. I. RESULT AFTER EXCISION OF THE TARSUS.

Right foot: Three cuneiform, part of cuboid, scaphoid, and bases of metatarsal bones removed.

Left foot: Lower end of tibia, astragalus, three cuneiform, cuboid, and scaphoid bones removed.

On the 5th of April, 1886, she returned to the hospital much improved in general health. There was still a small sinus at site of op-

eration in left foot, which discharged a little glairy synovial looking fluid. The right foot was in much the same condition as before, the disease having kept fairly stationary, and being apparently confined entirely to the tarso metatarsal joint. The foot was swollen and painful. Carious bone could be felt with a probe through all the sinuses.



FIG. 2. RESULT AFTER EXCISION OF THE TARSUS.
Same case as Fig. 1; different view.

On the 25th of April she was again etherized, and the diseased bone removed from the left foot. Two longitudinal incisions were made, one on the outer and the other on the inner side of the foot. The soft parts were lifted from the dorsum of the foot and the extent of the dis-

ease seen. The three cuneiform bones with the bases of the inner three metatarsal bones were found to be in a carious condition; also the anterior portion of the scaphoid. The cuboid bone also was involved, where it articulated with the external cuneiform. But the articulations between the cuboid and the two outer metatarsal bones were healthy. The bases of the metatarsal bones were removed with a fine saw, and the three cuneiform bones taken away. The anterior portion of the scaphoid and the greater portion of the cuboid were removed also. A large space was now left, the posterior part of the foot being only connected with the toes by the soft parts. The cavity was washed out with an antiseptic solution and stuffed with iodoform gauze (freshly made), and the foot covered with a jute pad, and over this an outside gutta-percha splint was moulded. The sinus in the left foot was scraped out.

From the time of the operation the progress of the patient towards recovery was uninterrupted. The wound was redressed every ten or fifteen days, in all four times, when it was completely healed. The foot, though somewhat shortened and flat, was of good shape. The temperature throughout never rose above 99.5° , and the foot never gave the slightest pain or kept her from sleeping. The sinus in the left foot after the scraping, rapidly healed. On the 30th of July patient was walking about the ward.

There was some inversion of the left foot owing to the presence of the external malleolus, which made the outer side of the foot much firmer than the inner. This inversion was corrected by a suitably made boot with an inside metal rod fixed to the sole and fixed above to the leg by a leather collar. Had I to perform a similar operation I should remove the external malleolus, even if it was healthy, as by this means the symmetry of the foot would be preserved. I once before left it in excising the ankle joint for a badly set Pott's fracture, with good results. This case exemplifies well the advantage of conservative methods of treatment, the patient having now two fairly useful feet. The accompanying cuts show the present condition.

ON THE ADVANTAGES OF SUPRA-PUBIC LITHOTOMY, WITH A REPORT OF A CASE.¹

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SINCE modern surgery has more and more succeeded in extending the application of antiseptic principles to the oral cavity, the rectum, and to the bladder, epicystotomy has been reclaimed from undeserved neglect. Germany and Austro-Hungary have especially contributed a respectable series of successful cases, demonstrating that many of the chief objections to this procedure have, by dint of improvements of the method, lost most of their weight. It is interesting to note that the last and most weighty opponent of this method was Sir Henry Thompson, a countryman of the brothers Dr. James Douglas and Mr. John Douglas, who in 1717 and 1718 first demonstrated on the cadaver and successfully performed on the living subject the operation, as the venerable Cheselden informs us in his excellent little treatise, "On the High Operation for the Stone," published in 1723 in London.

Viewing the more recent literature of the subject without prejudice, it must be acknowledged that the range of the indications for the performance of epicystotomy had been until recently unnecessarily narrow. The main objections raised were two: *First*, the difficulty of its performance, especially in adult subjects, which refers principally to the danger of injuring the peritonæum. *Second*, the difficult after-treatment, involving the knotty question of suturing the bladder or choosing the open treatment instead, and finally the avoidance of urine infiltration and its consequences.

¹Read before the New York Surgical Society, May 10, 1886.

Garson and Petersen have shown that distension of the rectal pouch by a suitable soft rubber bag filled with water, when in position, will raise a full bladder of an adult subject sufficiently above the level of the symphysis pubis to permit a free incision of six centimetres in length into the organ without the least risk of cutting the peritonæum.

Willie Meyer, lately of Bonn, at present of this city, reported in 1884, in Langenbeck's "*Archiv*," forty-one cases of suture of the bladder, sixteen of which were successful; in seventeen cases suppuration followed, but ended in cure. Eight patients died in consequence of the operation—one of erysipelas and seven of septicæmia. The results reported since by Bergmann, Antal, and others have much improved, which may be undoubtedly ascribed to a more careful selection, all cases accompanied by septic processes being rejected and treated by the open method.

The open method, however, as advocated and practiced by Dr. Trendelenburg, offers the greatest safety as regards avoidance of septicæmia due to urine infiltration, phlegmon, or erysipelas. An essential part of this is the semi-prone posture of the patient to be observed after the operation. In this position not a drop of urine can be retained in the bladder, but it must escape through a soft drainage-tube suitably attached.

The enormous advantages of epicystotomy in cases where an exact exploration of the bladder by touch and sight becomes necessary need not be dwelt upon. The exact diagnosis of the more intimate relations of one or more encysted stones and their removal, the stanching of rebellious cystic hæmorrhages by ligature or the cautery, the diagnosis and safe and complete removal of cystic tumors, will be rational and safe processes, even in cases of a very much enlarged prostate, instead of being hap-hazard, dangerous and often incomplete and unsatisfactory endeavors, as they frequently must be if the perineal section is exclusively employed.

Not wishing to take up too much of your time, I refer you, for a closer study of the merits of the question, to the lucid and very interesting paper of Dr. Meyer alluded to ("*Arch. f. klin. Chir.*," vol. xxxi, p. 494), which contains abundant casuistic

material to bear out every statement made therein in favor of the operation.

I deem it proper to bring the subjoined case to your notice, although it terminated fatally, first on account of its inherent pathological interest, and chiefly because it was marked by perfect safety and ease in exposing and incising the bladder with hardly any loss of blood, and by the facility with which the stones could be grasped and extracted under the guidance of the eye from bladder and diverticulum. The history is as follows :

Martin Gyr, a Swiss laborer, æt. 50, was admitted to the German Hospital on April 8. He stated that he had been suffering from difficulty of micturition for more than ten years, having had no treatment whatever until within a few days, when a cystic stone was detected by Dr. Meyer, at the German Dispensary. The usual symptoms of the most pronounced character were present. The patient could not retain more than an ounce of water, and had to urinate every fifteen minutes by day and night. Examination of the alkaline urine gave evidence of intense cystic catarrh and of pyelo-nephritis, casts and pelvic epithelia being found. The filtered urine contained a considerable amount of albumin.

The patient presented an abject picture of emaciation, pain and suffering, and was delighted at the possibility of getting relief by an operation. Slight elevations of temperature were observed every evening.

Physical examination demonstrated a normal condition of the internal organs, excepting the kidneys and bladder; anæmia, with rapid and rather feeble pulse. The stone-searcher established the presence of stone in the bladder, but, fearing a possible reaction, no extended examination and measuring of the stones was insisted upon. So much, however, was clear, that the much-contracted bladder contained either a single large or a number of smaller stones. By introducing the finger into the rectum a rather massive protrusion of a hard body toward that organ could be felt. The patient was made comfortable by the free administration of opiates, and all endeavors were employed to improve his general condition by abundant stimulation and food. In weighing the admissibility of an operation, the wretched state of the patient made it clear that any operative interference would be fraught with unusual danger from shock, yet, in view of the fact that longer delay was inadmissible, and that, unrelieved, the patient would have

to succumb soon and certainly, it was decided proper to offer him a chance, however slender, of recovery by operation. Regarding the selection of the method, it had to be borne in mind that a prolonged anæsthesia, such as litholapaxy would render necessary, was inadmissible in this case. A grave objection to any one of the perineal sections was the unavoidable hæmorrhage, the amount of which varies considerably in different cases, can never be estimated beforehand, and occasionally is serious. The high operation was naturally thought of, first, because it would permit bloodless access to the bladder; second, because it would permit rapid completion of the extraction of the stone or stones; and, finally, because it would secure perfect drainage. The question which anæsthetic should be employed was decided in favor of chloroform, on account of the danger that the administration of ether would entail in the presence of the renal condition.

On April, 12, the patient having been brought under the influence of chloroform, a soft-rubber bag was introduced into the rectum and was distended by about 500 c. c. of tepid water. After this the bladder was filled with 200 c.c. of tepid boro-salicylic solution. A longitudinal incision was carried through the integument and linea alba down upon the fascia transversalis with minute loss of blood, commencing at about three inches from and extending downward to a little beyond the symphysis. The fascia transversalis having been severed, the peritonæum became exposed to view, and doubts were entertained about the possibility of now incising the bladder. Thereupon it was decided to inject 100 c. c. more of fluid into the bladder. While this was done it could be distinctly seen how the bladder rose up from behind the symphysis, pushing before it the reflected fold of the peritonæum marked by a clearly defined transverse depression. An incision of one inch and a half being made into the bladder, its contents escaped. The edges of the incision were drawn apart, the remnant of the boro-salicylic solution was mopped out, and thereupon the presence of more than one stone could be seen and felt. First an ovoid, smooth, hard stone was grasped and extracted. After this a second rather rough, very hard stone became visible, which was not so freely movable as the former, but seemed to be attached somewhere on its posterior face, and yielded only after being forcibly rotated. On inspection, the freshly broken-off surface of a stalactitic projection was seen on its posterior side, indicating that a continuation of it had existed, projecting either into a ureter or into a diverticulum. This second stone showed two facets—a large one corresponding to the round smooth stone first extracted, and another smaller one of apparently re-

cent formation: On introducing the finger into the bladder, a conical stone was felt to project from a diverticulum situated posteriorly and to the left side, the site of this corresponding to the resistant tumor felt in the rectum. The index-finger was cautiously inserted into the orifice of this diverticulum, which was felt to yield to this gentle dilatation. A forceps grasped and extracted the stone easily from its bed.

It was clear that another stone remained to be extracted; but, the patient having been under the influence of the anæsthetic for twenty minutes and his pulse becoming thready, it was deemed imprudent to continue further search. As it was intended to leave the incision open, the extraction of this remaining stone, it was thought, could be easily accomplished at the first suitable occasion. A number of camphorated ether injections were administered hypodermically and the patient was put to bed. Previous to this a T-shaped drainage-tube, prepared according to the directions given by Trendelenburg, was inserted into the bladder, and another drainage-tube was passed into the bottom of the diverticulum. The position occupied by the patient in bed was semi-prone, his left hip resting upon a ring-shaped air-cushion, his knees being drawn up, and his back being supported by a number of pillows held up by the back of a chair. The skin of the belly was freely anointed with vaseline, and a pus-basin was placed underneath the projecting ends of the drainage-tubes, from which urine was seen to escape in dribbles. Hot bottles and stimulants were used, but, in spite of the insignificant loss of blood and of the small quantity (10 grammes) of chloroform used, the shock of the operation proved to be too great. He rallied three or four times, to relapse into a collapsed condition, and died five hours after having been placed in bed.

This not wholly unexpected result of the operation proves that the resistance of the patient had been lowered to such an extent that even this mild and bloodless procedure led to a fatal termination, and that any other operation, such as lithotripsy or a perineal section, would have caused death more speedily. Further, it seems to be clear that in this case an extraction of the stones from the diverticula by the lower operation or lithotripsy could not have been accomplished.

On post-mortem examination, the fourth stone, contained in a smaller diverticulum, was removed. It was then seen that its detection and extraction could have been easily accomplished. The aggregate weight of the four stones was 51 grammes, the heaviest being the round smooth stone extracted from the bladder itself, weighing $22\frac{1}{2}$ grammes, its longitudinal diameter being $3\frac{1}{8}$ cm., its transverse diameter $2\frac{1}{2}$ cm. The next in weight, 15 grammes, was a pear-shaped stone re-

moved from the larger diverticulum, its length being $4\frac{1}{2}$ cm., its thickness 3 cm.; its apex, which had projected into the bladder, showed an oblique facet corresponding to the smaller facet of the other stone found in the cavity of the bladder. The third stone just alluded to as found in the bladder was irregularly shaped, having two facets and a stalactitic fracture-surface about $\frac{1}{2}$ cm. in diameter. This weighed 10 grammes, and was apparently one with the fourth; the smallest stone found in the second diverticulum, which weighed $3\frac{1}{2}$ grammes, was pear-shaped and was $2\frac{1}{2}$ cm. long and $1\frac{3}{4}$ cm. wide. All the stones show, where they have not been worn smooth, a crystalline surface of whitish color. They consist of alternate layers of carbonate and of oxalate of lime, the latter substance preponderating.

In studying the position and relations of these stones it seems almost certain that there were originally only two stones present, the largest smooth one being the oldest. The remaining stones must have been originally one body, the main part of which was situated in the bladder and gradually sent out two pear-shaped projections, each of which was found to be lodged in a diverticulum of corresponding size. The larger one, the presence of which could be felt before the operation by touch through the rectum, must have been broken off some time previous to the operation. The fractured surfaces, preserving apposition, became worn into facets. The peristaltic motion at defecation may have played an important part in the production of this phenomenon.

The post-mortem examination revealed a normal urethra, enormous concentric hypertrophy of the bladder, the two diverticula above described within its posterior wall, and very much distended ureters. The latter resembled infantile small intestines, their width varying between 1 and 3 ctm., the thickness of their walls also varying to a considerable extent. The greatest amount of distension was noticed in that part of the ureters lying next to the bladder. Both kidneys were somewhat enlarged, their capsule could be stripped off very easily, color pale, calices and pelves much thickened and dilated, the kidney tissue in an advanced state of fatty degeneration.

CLINICAL OBSERVATIONS ON FIBROMYOMATOUS TUMORS OF THE UTERUS.¹

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AMONG a limited number of the fibromyomatous tumors of the uterus which have altogether come under my observation, I had the opportunity in three instances to see a rather uncommon termination of the disease, namely, in two cases by expulsion of tumor-masses after spontaneous sloughing; in the third case by shrinkage of the tumor after central suppuration and softening. In all of these cases more or less surgical help became necessary to aid the natural process, but all of them, in spite of protracted serious illness, at last ended with recovery, and illustrate in a very eloquent manner, the ability of nature to find, in spite of serious obstacles, its way toward ultimate recovery. The following short histories may sufficiently point out the essential features of these cases.

CASE I.—On the 12th of October, 1883, I saw in consultation with Dr. Schaide, of this city, Mrs. B., then æt. 45, who was suffering from a large abdominal tumor, which had existed for about three years, and by a number of physicians, both here and abroad, had been diagnosticated as fibromyoma of the uterus. To Dr. S. I owe most of the following notes about her history. Mrs. B. had been advised everywhere not to have an operation done on account of the great risk attached to it. Within the last year she had been treated repeatedly for long periods of time with ergot, administered hypodermically as well as internally, but without any noteworthy success, in reference to hæmorrhage as well as size of the tumor. The latter, when I saw the

¹ Read before the New York Surgical Society, May 24, 1886.

FREDENICK LANGE.

patient, filled as a resistant, somewhat irregularly shaped mass, almost the entire abdomen. Having at that time already operated successfully upon several patients with exceptionally large solid uterine tumors, I proposed, in view of the intense suffering of the patient, the radical operation. The patient declined. In the beginning of November her condition became feverish, there appeared an offensive discharge from the vagina, and the patient lost rapidly in flesh. On the 18th of November Dr. S. was able to remove a piece of the tumor about the size of the fist, in a decomposed necrotic condition, from the vagina, which, for the next two weeks, was almost daily followed by others of smaller or larger size. A particularly large piece was extracted from the uterus at the end of November. I then saw the patient again in consultation. To my surprise the enormous tumor had so much disappeared that the uterus now was not larger than at about the fourth or fifth month of pregnancy. There existed still a very offensive discharge, which, however, ceased very promptly, after I had extracted from the uterine cavity the remainder of an entirely separated mass of tumor. The offensive smell of this sloughed tissue was beyond description. The uterine cavity was disinfected as thoroughly as possible, and disinfecting irrigations kept up for some time after. The patient, though very much run down, made a rather rapid recovery and was able, four weeks later, to see Dr. S. at his office. The latter had the kindness to inform me that Mrs. B. is now in perfect health. About a year ago her menses, which had become quite normal, ceased. There is no recurrence of the tumor, and the parts seem to be in an almost normal condition. So far as I remember, the mass of the tumor at my first visit must have weighed at least fifteen to twenty pounds.

CASE II.—Mrs. H., æt. 46, who had never been pregnant, consulted me in October last. Though otherwise in good health, she had suffered for the last two years from profuse and prolonged menstruation, now and then associated with severe pains in her back and vomiting. Within the last month, a few days before and after menstruation, a white discharge appeared. There was no doubt that her trouble was due to a fibromyomatous tumor of such size that the uterus, on examination, reached within about two fingers' breadth of the umbilicus. During the time from the 12th of October to the 6th of November about eighteen hypodermic injections of Squibb's fluid extract of ergot were administered in the hypogastric region. They caused a good deal of pain and inflammatory irritation, which, however, by cold applications was kept down, so that no abscesses occurred. Small indurations, however, remained at the points of injec-

tion. During the menstrual period the patient rested at home, did not get any hypodermic injections, but took the ergot internally, 15 to 20 drops twice a day. On the 14th of December I was called to see Mrs. H. at her house. She had a bloody, somewhat offensive discharge from the vagina, and suffered from great restlessness and pain of labor-like character. The vaginal portion of the uterus was softened and dilated, and a soft mass could be felt within it. On the following day, under chloroform, a considerable mass, about a pound and a half, of sloughed fibromyomatous tumor was removed from the uterine cavity, after lateral incisions into the vaginal portion had been made. On account of the narrowness of the sexual passages and the impossibility of pulling down the uterus, I could not pass my finger high up into the uterine cavity. But I was able to ascertain that a good many necrotic irregular pieces of tissue remained undetached as yet. Two drainage tubes were introduced into the uterus, and repeated irrigations made with a warm solution of salicylic and boracic acids, and once or twice a day of corrosive sublimate solution 1:5000. But in spite of my endeavors, I did not succeed in preventing further decomposition. The drainage tubes were so often closed by small particles of necrotic tissue that they did not act satisfactorily. Besides that, their presence in the internal orifice seemed to be the source of constant irritation. I therefore removed them, and applied irrigation several times a day, by passing a Fritsche's uterine irrigator high up into the uterine cavity, usually injecting, first a stronger solution (1:2000) of corrosive sublimate, followed by injection of bor-salicylic acid, according to Thiersch's prescription.

Very soon, under repeated chills and high fever, the palpable symptoms of peri- and para-metritis set in. Especially in the cavum Douglasii, where a fibroma, inserted at the supravaginal portion of the cervix, was felt before, a diffuse infiltration and exudation could be made out, pushing the lower portion of the uterus toward the symphysis. Dr. Noeggerath was called in consultation, and was likewise convinced of the extremely precarious condition of the patient. It was decided to renew the attempt to remove the source of infection from the uterine cavity, and on the 23d of December, in the presence and with the kind help of Dr. Noeggerath, sloughed masses, much less, however, than the first time, were again removed, partly by forceps, partly by curette. It was discovered that from the anterior as well as the posterior aspect, tumor-like prominences protruded toward the uterine cavity, and that the process of sloughing was particularly seated posteriorly and toward the fundus. The uterus, by this time, had al-

ready become considerably reduced in size. On the 5th of January I made a deep incision into the exudation through the posterior cul-de-sac, evacuating pus mixed with small pieces of necrotic tissue, as I supposed, from the centre of the fibroma which had undergone supuration, and from that time, while the discharge from the uterus became gradually less, and almost daily small pieces of necrotic tissue were expelled, the patient's condition became decidedly better. Several times slight hæmorrhage accompanied the expulsion of sloughs. At present, for more than a month, the discharge has entirely ceased. The uterus is very little larger than its normal size. There is still a decided induration at the seat of the para- and peri-metritic inflammation, which, however, is gradually diminishing. The general condition is very good, and twice already, if I am not mistaken, the menstrual flow has appeared again, normal in quantity and duration. Mrs. H. is now 47 years of age, and certainly very near the end of her menstrual life. I think there is very little probability that a new formation of fibromyomata will occur. I am under the impression that in this case the whole mass of the tumor had not sloughed, but that several lumps, together with the gradual contraction of the uterus, have disappeared either by atrophy or fatty degeneration. It seems, further, that in this case the administration of the ergot had a causal relation to the necrosis and elimination of the main part of the tumor.

CASE III.—Miss B. L., 28 years of age, was in good health until four years ago, when she began to suffer from profuse menstrual hæmorrhage and pain in her back, which were ascribed by a physician as due to the presence of a uterine tumor. For about three months she was treated with hypodermic injections of ergot, altogether about thirty in number, but without success. Three years ago, in making a forced attempt to prevent herself from falling down by throwing herself backward, she felt a severe pain in the abdomen, and had the sensation as if something had been torn; the pain in her abdomen persisted during the summer. Ergot, internally, was used again, but gave her no relief. In September, 1883, I saw the patient in consultation with Dr. Dieffenbach, when she presented a deep-seated phlegmon of the abdominal wall, apparently in the retroperitoneal space below the umbilicus. On the 15th of September, through an incision in the linea alba, a great quantity of pus was discharged; a drainage tube was passed at one point to such a depth, into a rather small appendix of the cavity, as to allow of the conclusion that it must reach some distance into the abdominal cavity. After some time, when infiltration and pain had sufficiently ceased, it could be made out that a uterine tumor, origi-

nating from the fundus of the uterus, was adherent to the abdominal wall, and that a pus cavity passed to some distance into its mass. Suppuration went on for several months, and the tumor gradually decreased in size, having presented originally about the dimensions of a small child's head. Small, irregularly shaped calcareous masses were repeatedly washed out or extracted from the bottom of the wound. On the 31st of December, 1883, after having enlarged the existing opening, I removed from the rather narrow cavity by scraping, elevator, forceps and finger, quite a considerable quantity of calcareous spiculæ, shells and irregular shaped bodies, in all perhaps as much as a table-spoonful. Four weeks later cicatrization was complete, and since then the patient has enjoyed perfect health. A hard lump in connection with the scar, about the size of a duck's egg, can be still felt, but does not cause the slightest inconvenience, while menstruation has at all times been normal. I cannot say what connection exists at present between the tumor and the uterus, the patient not having undergone an examination of sufficient thoroughness. It seems in this case, through an injury, perhaps by partial rupture of the insertion of the tumor, its nutrition has been interfered with until finally central softening with suppuration occurred, which gradually led to its diminution and arrest of growth and development. No medical treatment was used after the operative interference.

Though quite a number of cases are on record in which, after the manner described in the preceding histories, fibromyomatous tumors have disappeared, they are rather exceptional, and withal this natural way of healing is not free from danger, no small percentage of cases ending fatally. We are, therefore, in no way entitled to trust to such an exceptional and unreliable course of the disease so far as to give it any important weight in regard to our prognosis of fibromyomatous tumors of the uterus. We know only too well that sometimes these tumors will have an unbounded development, and, after they have attained a certain size, become dangerous, and in an imperative way demand our surgical help, and that so much more as in these cases medicinal treatment is usually nothing but loss of time.

With reference to the question, how far the extirpation of the ovaries may effectually check the development of fibromyomatous tumors, I am unable to give a satisfactory answer

from my own experience. I have attempted the operation once, but only to find out that in that case the removal of the ovaries would have been a very tedious operation, and probably not much less dangerous than the removal of the whole mass. In those five cases in which so far, I have seen the necessity of performing supravaginal amputation of the uterus for the disease in question, the tumors were of such uncommon size, and were mostly so complicated by adhesions, that it would have been no easy thing at all to get the ovaries, and this, together with the question whether, in such cases, castration promises the desired result, has led me in all of those five cases to give preference to the radical method of operating. All have ended in recovery; two of them have been reported to this Society in previous years, one being complicated with pregnancy; the third one was operated on about a year and a half ago; of the last two cases which have been operated upon in the course of this year, I present before you the tumors removed. With reference to the third of the before-mentioned cases, I would say that it was that of a married lady of about 33, who for several years at every menstrual period had bled so abundantly as to become quite anæmic, her whole way of living finally being devoted to the purpose of building herself up to withstand the drain of the next menstruation. She suffered repeatedly from very alarming attacks of weakness of the heart, which seemed to be dilated in its right half, and there was no doubt that, every other remedy having proved ineffectual, she would finally have died from the consequences of a fibromyomatous degeneration of the uterus, which, as the specimen afterwards proved, consisted of a large number of tumors of different size and location, massed together in the different layers of the uterus, and forming a tumor of the size of the uterus in the seventh month of pregnancy.

The operation was performed in the same manner that I am about to describe in the following cases, and recovery took place without any untoward symptom, except that about two months after the operation the elastic ligature by which the stump of the uterus had been secured, passed away through the external os. The lady is now in flourishing health. About

nine months ago she passed a considerable quantity of blood with her urine for three or four days, with some feeling of pain in her back and a general sensation as if she had her period. The urine afterward became normal, and, so far as I know, no such hæmorrhage has recurred. She pretends to enjoy sexual intercourse without impairment as compared with her healthy period of married life before the operation. Lately she has become rather stout.

CASE IV.—In January of this year Miss W., 33 years of age, consulted me for an abdominal tumor which had been noticed for the past three years, but only lately attention had been called to it, by its more rapid growth and large size having been the source of disturbance. The whole abdomen seemed to be occupied by a resistant, rather smooth tumor reaching from the os pubis high up to the epigastrium and the free border of the ribs. The tumor was very movable and allowed of passing the fingers partly under it toward the entrance of the small pelvis, so that on the first examination it did not seem to take its origin from a pelvic organ, though its movements were communicated to the uterus. A closer examination, however, revealed a connection with the fundus uteri, and made the diagnosis of a pedunculated fibrous tumor the most probable.

In this case the operation was comparatively simple. Though it would have been possible to remove the tumor without sacrificing the internal sexual organs, I still deemed it advisable to perform the supravaginal amputation for the following reasons: First, I thought of the possibility, that from its rapid growth within the last months the tumor might have assumed a more malignant character; and secondly, several small beginning fibromata could be distinguished lower down within the walls of the uterus which, if left behind, would have developed further and perhaps more rapidly.

The operation was performed in the following manner: Through an incision in the linea alba reaching from the epigastrium almost down to the symphysis pubis, the tumor was slowly and without difficulty brought before the abdominal walls; the adhesions were but very slight. Enormously dilated veins occupied the broad ligaments. Then from both sides in a horizontal direction the broad ligaments were tied

in several portions between two ligatures until close to the lateral edges of the uterus, and cut across. I then passed an elastic ligature under the peritoneal covering of the cervix uteri, and tied it by means of coarse silk thread. About 3 cm. above this ligature the uterus was amputated and thus the whole mass removed. The tissue of the stump was then excised in the shape of a funnel, so that the mucous membrane was removed as low down as the elastic ligature permitted. At the deepest point the actual cautery was applied and a small quantity of iodoform powdered over the eschar. The funnel was then closed by a number of deep catgut sutures, between which the peritoneal covering was adjusted by superficial ones. The ends of all the ligated tissues were then cauterized, sprinkled with iodoform, and the abdomen closed by peritoneal and other sutures in the usual manner. The patient had a very rapid recovery almost without any febrile reaction, and is so far entirely well.

In a case like this the operation does not present any great difficulty, nor does it involve any particular danger if only proper care is taken not to expose the patient to an unnecessary loss of blood. I think the patient, apart from the blood that was contained within the removed parts, lost hardly more than an ounce of blood. The way of passing the elastic ligature beneath the peritoneum was intended to secure a certain amount of nutrition for the stump. The latter, in fact, did not become entirely bloodless, but presented, during the act of being tightly closed up by stitches, some slight oozing which, however, was checked by the sutures.

The weight of the tumor now, after a five month's preservation in alcohol, is nine and a half pounds. It is throughout all its substance a fibromyoma.

The second specimen, which I present here, was obtained by an operation of much more seriousness and difficulty. In fact, the operation was only undertaken at the urgent request of the patient.

CASE V.—Miss L., 33 years of age at the time of operation, had from her twenty-sixth year suffered from abundant menstrual hæmorrhage due to a tumor. She was treated with hypodermic injections of ergot, some of which, she states, were injected into the mass of the tumor itself and gave rise to an intense peritonitis which lasted for six

weeks. No relief followed. The tumor gradually increased in size. Within the last months her suffering had become most intense. She had constant pain : was hardly able to walk ; her digestion became impaired, and she lost rapidly in strength and flesh. The external examination revealed the presence of hard, lumpy, irregular masses in the lower part of the abdomen, which, on the left side, extended close to the border of the ribs. A large portion of the tumor could be felt from the vagina reaching far down into the small pelvis, displacing the os uteri toward the symphysis pubis and pushing it in an upward direction. Everything seemed fixed and immovable. On the 11th of January the tumor was removed. Gradually the numerous adhesions with the anterior abdominal wall, the omentum, and intestines were removed. There existed venous vessels in such quantity and of such enormous size as I have never seen before, and requiring careful ligation. A great difficulty was experienced in shelling out that part of the tumor, which on both sides had grown under the peritoneum between the layers of the broad ligaments. At last the cervix uteri was reached, an elastic ligature applied, and the mass removed. The rather free hæmorrhage from the extensive raw surface, which corresponded to the subserous attachment of the tumor, was at last checked by ligatures, sutures, and the actual cautery. A careful toilet of the peritoneum followed, and the abdomen was closed. Repeatedly during the operation the patient had very alarming attacks of heart-weakness, which obliged me to interrupt the operation and at one time apply artificial respiration. It seemed to me that these attacks depended on forced tractions which could not very well be avoided during the attempt to get under the immovable and fixed mass.

In this case the cervix uteri was entirely void of peritoneal covering, which had been lifted from it by the adjacent subserous tumor masses. The mucous membrane of the cervix was excised as in the case before, but the indication to finish the operation was so urgent that I had to desist from any further details in treating the stump of the uterus. Altogether the operation had lasted about three hours and a half. The patient had a very protracted convalescence disturbed by peritonitis and the formation of an abscess, which discharged itself spontaneously through the cervical channel. Another abscess formed itself near the anterior abdominal wall, and was opened in the line of the original incision, leaving a fistula. On the 24th of April I dilated the cervix on account of persistent offensive suppuration, and extracted quite a number of coarse silk ligatures, but was unable to find the elastic ligature, which apparently was safely encysted. Several other ligatures were re-

moved through an incision in the abdominal wall a few centimetres to the left of the original cut, and since then the discharge has almost entirely disappeared; the patient does not suffer any more, and can be regarded, I think, as definitely convalescent. The weight of the alcohol specimen is ten pounds.

I may be permitted to add, that a patient from whom I removed the uterus for myxosarcoma about four or five years ago, and whose specimen and history were presented before this Society, is so far enjoying good health. I saw her about one year ago, and there was no evidence of any recurrence of the disease. She promised to let me know if in any way she should be troubled.

I should also like to mention a case of multiple fibromyomata of the uterus, in which my operative efforts were not followed by such good fortune:

CASE VI.—A recently married woman of about 30 years, nullipara, had been suffering similarly to the above-mentioned patients during her menstrual period. Lately a great deal of pain and tenderness in the hypogastric region had supervened, and the patient, asking for a radical curative effort, and having exhausted other treatment without success, was subjected to laparomyotomy. Two pedunculated fibromata about the size of a small fist were found, arising from the fundus uteri; the one impacted in Douglas's space was easily recovered after ligating the pedicle. The other, to the right side of the uterus and in front of the broad ligament, had become necrotic in consequence of torsion of its pedicle, and was imbedded in a sac of adherent peritoneum, which, however, could be detached without great difficulty. There was no exudation of pus or fluid. The tumor looked gray, with a greenish tint, and contained no fluid blood. I tried to tie the pedicle within its living part, but a small necrotic portion remained beyond the ligature. A third myoma, about the size of a small hen's egg, was broadly inserted on the anterior wall of the uterus right above the cervix, and for its removal and shelling out a thin layer of uterine tissue had to be severed. There was considerable capillary oozing from the bed of the tumor, and the efforts to check the hæmorrhage by Paquelin's cautery, stitches and ligation, made the operation prolonged. Death occurred on the third day, apparently from septic peritonitis. No autopsy was conceded.

I presume infection may have started from the place where the necrotic fibroma was embedded. Here, perhaps, infectious germs existed, which, though made harmless for the time by the adherent peritoneum, were set free by the operation, and found outside of their prison very favorable chances for their deleterious action. The torsion of the pedicle illustrated very beautifully the way in which such tumors at last might be deprived of their blood supply, and finally undergo retrogressive metamorphosis.

With reference to the supravaginal amputation of the uterus I should like to mention, in a few words, the different ways in which the uterine stump is secured and treated. Thus, as previously in ovariectomy, the extra- and intra-peritoneal method stand against each other, and on both sides equally good results are obtained. Schröder and Martin, in their very extensive practice, trust to tight suture of the stump after funnel-like excision. Schröder first advised *étage* suture. They do not use the permanent elastic ligature, and are strong advocates of the intraperitoneal treatment. So is Olshausen, who uses the elastic ligature, Rose, and others; while extra-peritoneal treatment is given preference by Hegar, Kaltenbach, Péan and others, as involving less risk in reference to septic poisoning, and leaving the stump accessible in case of secondary hæmorrhage.

There exists, perhaps, no more striking illustration of the safety of aseptic proceedings than the fact that such large masses of tissue as the ligated stump of the fibromyomatous uterus can be left in the abdominal cavity, deprived of blood supply, without undergoing decomposition, and giving rise to infection. On the other hand, it cannot be doubted that a certain amount of risk will always be attached to their way of acting, and that those methods which secure nutrition to the stump with intraperitoneal treatment will have to be regarded as the most proper ones. That good results can be achieved by the extraperitoneal method nobody will doubt, and repeatedly successful cases of it have been reported to this Society. I am, however, convinced that, by-and-by, just as it has been with ovariectomy, the intraperitoneal treatment will be more

and more adopted. I should certainly give preference to Schröder's method of securing the stump by tight étage sutures, above all others, if with reference to hæmorrhage I should regard it as free from all danger. It may be safer in the hands of operators, who are working on such a large scale as Schröder and Martin do. I must myself concede, that heretofore only the apprehension of a possible hæmorrhage has prevented me from following them. In order to combine the advantages which the elastic ligature offers in regard to hæmorrhage, with those offered by suturing the stump, I have tried in one of the above cases, to apply the ligature beneath the peritoneum, so that a certain amount of blood can be furnished to the stump through its peritoneal covering, which, of course, must be detached as little as possible above the ligature. Further observations will have to be made, in order to ascertain whether this procedure will always yield as good results as it has in my case as above recorded.

One mechanical contrivance I would mention, and of which I like to make use in all abdominal operations wherever practicable, is Thiersch's ligature spindles, with or without holder, which I have presented at a former meeting of this society. They are, indeed, very handy, and allow of securing pedicles and fleshy adhesions with more constricting force, than can be exerted in the ordinary way of tying.

The abdominal incision ought to be long enough to allow of an easy access to the operating field. I certainly prefer too large an incision, to one which obliges the operator to work in the dark, or to do uncertain manipulation. For this latter reason, often one of the principal dangers in these operations is incurred, namely, unnecessary and abundant loss of blood, simply because the operator does not in time and with easiness get at the bleeding point. If one has seen those enormously dilated veins in these tumors, one must be convinced that bleeding from such a vessel for a very short time must be sufficient to endanger life. For this reason, also, every undue tearing force ought to be avoided, and it is safer and more wise to work slowly and cautiously, than to hurry at unnecessary hazard. The length of the abdominal incision adds almost noth-

ing to the danger and gravity of the operation, and incisions of fifteen or more inches will heal without difficulty. To obviate loss of warmth from extensive denudation of intestine, the use of large, flat sponges dipped in a weak aseptic fluid seems to me the most commendable.

EDITORIAL ARTICLES.

THE TREATMENT OF COMPOUND FRACTURES OF THE SKULL.

The current number of *Volkman's Sammlung klinischer Vorträge*¹ contains an elaborate contribution to the subject of compound fractures of the skull, with special regard to their treatment, by Dr. W. Wagner, of Königshütte, which appears worthy of special notice, not only for the reason that a large number of new cases is recorded, and that exceptionally good results have been achieved, but more especially on account of the author's divergence from the indications and mode of treatment heretofore generally accepted in compound injuries to the skull, and the attention given to the antiseptic method.

Thus the author, it will be seen, is not in favor of trephining for rupture of the middle meningeal artery, at least not in any but extreme cases of intracranial pressure; nor does he think it necessary to elevate smaller depressed pieces of skull; but if the slightest quantity of foreign matter, or as much as a hair have penetrated through a fissure in the skull, he deems it an unavoidable necessity to lay open the cranial cavity—a point which our readers will remember to have been insisted upon by Wiesman, of Zürich², in a recent contribution to the subject.

The cases, all treated from the same point of view and in the same hospital, the hospital for coal miners at Königshütte, during a period of nine years are 95 in number, and consist for the most part of severe injuries to the skull, such as miners are constantly exposed to. The greater majority were received into the hospital immediately or very soon after the injury, and the mortality percentage of these cases is 1.23. About one-seventh of the number, however, did not apply for

¹Nos. 271 and 272. Chirurg. No. 85. April 20, 1886.

²Vide Annals of Surgery. Vol. II. P. 502. Dec., 1885.

treatment until at least twenty-four hours after the accident; and in this group the mortality averaged $33\frac{1}{3}$ per cent. The difference in these figures is due to antiseptic prophylaxis.

The author only cursorily considers the pathology and symptomatology of the subject, confining himself, as has been remarked, almost exclusively to the therapy of the injuries to the skull; and after giving quite a detailed review of the history of his subject, with special reference to the operation of trephining, he first considers the dangers of septic infections of skull-wounds. The smallest wound of the integument, when infected with septic matter, may lead to the most serious disturbance by the progress of the septic inflammation towards periostitis, purulent ostitis, osteo-phlebitis, meningitis, encephalitis; or the course of the infection may lead from periostitis through osteophlebitis to thrombosis of the venous sinuses and pyæmia. The dangers incident to septic infections increase as the injuries to the tissues penetrate more deeply.

If the peritoneum is severed, or if the bones of the skull are injured, the infectious matter is rapidly disseminated by means of the veins of the diploë, and infection of the brain and its tissues or pyæmic metastases result. If the cranial cavity is laid open, the septic infection leads to an inflammation of the dura mater, pachymeningitis externa, which may spread to the soft tissues enveloping the brain. But when the dura mater is injured as well, the danger for the patient is much enhanced by the immense susceptibility of the pia mater to septic infection.

A few hours suffice, in these latter cases, for the infection to gain a firm hold, so that nothing can stay the rapid development of inflammatory processes during the following days.

Erysipelas also plays an important part among such infections of scalp wounds, but does not materially differ as regards its prophylactic treatment from the other inflammatory processes.

Antiseptic prophylaxis, in fact, represents the key-note in the present treatment of all wounds and injuries to the skull, and should indicate what active therapeutic measures are to be chosen in each case.

Thorough cleansing of the injured parts and their immediate and

more remote surroundings should be the first step in all cases without exception. This precaution is of the utmost importance as the scalp is always soiled by fatty substances, the secretions of the sebaceous and sudorific glands, and by dust and floating matter from the air.

Simple scrubbing with soap water and a brush is not sufficient. A better way is to first scrub the scalp with soap and carbolic (3%) or sublimate (1%) solution and then shave the parts surrounding the wound. The hair of the entire head is then to be washed by means of wads of cotton soaked in ether, turpentine or absolute alcohol, until all fatty substances have been removed. Then the scalp is to be cleaned with soap and warm water, and finally with an antiseptic solution. The wound is then to be examined. In case the bone or even the periosteum can be felt by means of the inserted finger, the wound is to be opened up, either with retractors, or if necessary by incision, and, after ligating all bleeding arteries and thoroughly cleansing the wound, the parts minutely inspected. It may be necessary to anæsthetise the patient before doing this.

The simplest case of compound fracture of the skull is injury to the external lamina, generally produced by sword cuts. Frequently fragments of this layer are met with, which should be completely removed, excepting in those cases where large continuous pieces of bone have been sliced off and are still connected with the skull by means of the periosteum. These latter fragments may be held in position by sutures, and drainage effected by perforating them. In other cases disinfection, evening off of the margins of the wound, exact suture, drainage and application of an antiseptic dressing suffices.

In case a penetrating fissure is found to exist, the treatment should vary according to whether foreign bodies, hairs, etc., have become impacted between the fragments or not, and whether the margins of the fissure are comminuted or soiled. If neither is the case the wound is to be closed as before; the patient should be kept in bed for at least three days, and calomel (0.25 gm. b. i. d.) administered. These dressings, which should include the whole head to the middle of the forehead and the chin, and should be so applied as to exert a certain pressure upon the wound, may be changed on the fourth day, when

the drainage tubes are to be taken out; and again on the eighth in order to remove the sutures; they should not be completely left off until all parts have ceased to granulate, for fear of erysipelas.

In those cases, however, in which hairs or other bodies appear impacted in the fissures, they should at once be removed with the chisel and hammer.

Comminuted fragments of bone and soiled margins of fissures should be removed in the same way. But in case the fissure extends through the cranium for some distance under uninjured portions of the integument, no interference is necessary. Nor do slight differences in elevation of the fragments caused by depressions, indicate operative interference. Indeed, even fractures in which pieces of bone have been very appreciably depressed, by no means necessitate operative procedures, as long as no infection has taken place, although formerly such depressed pieces of bone formed indications for trephining. For the symptoms theoretically attributable to compression of the brain are in practice so confused with those of concussion and contusion of the brain, that the indications are not sufficiently clearly defined. The dangers of intracranial pressure are greatly exaggerated. The brain easily accustoms itself to depressed fragments, and can well bear the pressure of a moderate hæmorrhage from the middle meningeal arteries until the clot is absorbed. It is of far greater importance to prevent the infection of intracranial tissues than to relieve the brain from pressure; and it is this danger of infection arising from soiled wounds that may often demand operative interference. Entrance of foreign bodies into the wound, and injuries caused with unclean objects therefore indicate the use of the trephine or the chisel. Detached pieces of bone should be eliminated in order to anticipate a possible necrosis with prolonged suppuration. In cases where pointed instruments have penetrated through the bones of the skull, a sufficiently large piece of bone should be removed with the instrument to permit of perfect disinfection of the deeper injured parts. Septic infection can never be excluded with certainty, while an antiseptic operation may be done without incurring the least risk.

Extensive comminuted fractures are to be treated after the same

principles as given above; nor should the presence of more alarming nervous symptoms referable to commotion and compression of the brain defer the surgeon from the conscientious exercise of antiseptic measures. Osseous fragments are to be extracted, the wound freely laid open, coagula of blood removed, foreign bodies extracted, unless such a procedure would necessitate injuries to the brain. Hæmorrhages occurring in the brain-substance should be stilled by means of the actual cautery. In case there is reason to fear an accumulation of blood beneath the dura, the latter should be incised. Elevation of large masses of depressed bone may be necessary in some very extensive compound fractures of parts of the skull, when the patient has escaped immediate death.

In the adjustment of the dressing care must be taken that the drainage tubes do not enter too far into the wound. The wound may be covered with the help of plastic methods.

The general treatment should be adapted to the general condition of the patient. In the stage of depression after concussion of the brain excitants should be given, subcutaneous injections of ether and camphor ordered, and sinapisms and hot packings be applied to the skin; the head laid low.

In the stage of excitation following, the head should be raised, an ice-bag applied to the head and a brisk cathartic administered. Intracranial pressure demands the same treatment. In both cases the application of leeches in the region of some emissary does excellent service. Of the action of ergotin the author has little experience. But the main importance should be attached to the local surgical treatment.

Special precautions are necessary when fracture of both walls of the frontal sinus has established direct communication between the nasal cavity and the brain tissues. In this case the effective application of an antiseptic dressing occluding the wound is rendered difficult of performance. The author advises tamponade of the frontal sinus with antiseptic gauze in all such cases, even though it should be necessary to enlarge the external wound and at the risk of establishing a frontal fistula—disadvantages which are of little consequence in comparison to the dangers of septic infection incurred by permitting free access of

air to the cranial cavity. Absorption of the secretions by the gauze may cause artificial compression of the brain in these cases, a danger which should be borne in mind.

These considerations apply to other cavities situated in the immediate vicinity of the brain as well, and especially to the orbita and to the auditory meatus. Resection of a part of the orbital margin may become necessary in order to extract foreign bodies and to remove infectious matter. The auditory canal, after being cautiously cleansed by means of antiseptic solutions, may be filled with iodoform powder and loosely plugged with gauze. In cases of fracture of the ethmoid bone abundant dusting of the entire upper portion of the nasal cavity with iodoform is to be preferred to anterior and posterior tamponade. Iodoform inflation is also to be used in less recent cases when purulent secretions of the cavities mentioned have already appeared.

The author believes that his favorable results in cases of fracture of the base of the skull were entirely due to the adoption of this mode of treatment. For although many cases of fracture of the skull terminate fatally in the course of a few hours after the accident, in consequence of injuries affecting the central organs, and some of the author's cases took this course, yet, of all those who have survived the first 24 or 48 hours, and who were treated in the manner described, he subsequently lost not a single one—a result referable only to the antiseptic prophylactic treatment. The number of these cases amounts to twenty-three.

As to the treatment of less recent injuries to the skull, in which septic processes have already become established, it should not differ in principles from that of infected wounds situated in other parts.

For the purposes of disinfection the author uses an 8-per cent. solution of chloride of zinc and application of iodoform powder, after having cleaned the wound thoroughly with the help of a Volkmann's spoon, and incised all phlegmonous foci and recesses. Extensive phlegmons and erysipelatous inflammations of the scalp are treated with lotions containing acetate of alumina.

Inflammations of the intracranial tissues are not amenable to treatment; but if incipient forms of meningitis are to be treated, the author

is in favor of thorough disinfection of all accessible parts, or at least of an attempt to do so, and even of trephining for this purpose, if there is any hope of rendering the focus of infection aseptic.

The cases accompanying the paper are many of them individually of the highest interest and will repay minute perusal; some of them are also made the subject of valuable, special and general remarks in the text.

Although the chief result of the paper will be to have given more prominence to the propriety of considering the chance introduction of foreign matter into fissures and wounds of the skull as an urgent indication for trephining, yet the position taken by the author in regard to the question of trephining for intracranial pressure is one of such special interest at the present moment, when there is a controversy being carried on, and traceable through periodical literature, relating to these very questions, that it must play a conspicuous part in deciding the battle.

Without here entering into a more detailed discussion of this latter subject, we would refer, besides to Wiesmann's, to Von Bergmann's and Kroenlein's more recent contributions to the subject.¹

¹Vide ANNALS OF SURGERY, August 1886, p. 167; Sept. 1886, p. 232.

W. W. VAN ARSDALE.

ON THE CONTAGIOUSNESS OF LEPROSY.

The question whether leprosy be contagious has been much discussed recently at the Academy of Medicine of Paris. The theory of contagion has its partisans and its opponents, and the latter seem to be in the majority in that learned assembly. It may not be without interest to publish the results of researches on the subject undertaken in the Sandwich Islands, Mauritius and Réunion, as well as in British Guiana. These have recently been summarized in an interesting contribution to the *Progrès Médicale*, by Dr. R. Suzor, of Mauritius and from which we shall freely quote.

It is of secondary importance to know if leprosy existed in the Sand-

wich Islands prior to 1848, if M. Quoy has seen it there in 1819. The fact remains that at any rate the disease was exceedingly rare in 1848. At about that time commenced the immigration of the Chinese, and amongst them the presence of leprosy was recognized. Ten years later, in 1858, the disease was for the first time mentioned as common in the country. Either it did not exist before the arrival of the Chinese, and therefore it was they who introduced it; or, if it did exist before their time, how can we explain the extreme slowness of its development before their arrival and its sudden extension in the following ten years to such an extent that a tenth of the population became lepers? If the latter hypothesis be true, it reminds us forcibly of the case of Europe in the Middle Ages. Leprosy existed, but it was comparatively rare. The Crusaders, while in the East, went into the ancient homes of the scourge, and shortly after their return to their own country the disease became so prevalent that people talked of epidemics of leprosy, and in France alone more than 2,000 leper-houses were established to isolate the sick. Another fact is to be noted, that wherever isolation has been stringent the number of the affected has rapidly diminished. It is the inverse of what has passed at the Sandwich Islands, and the two facts seem to militate in favor of the idea of contagion.

Mauritius and Réunion until the 17th century were uninhabited, and the first colonists permanently established were French. Then came immigrations of Africans, Hindoos and lastly Chinese. At the present time hundreds of lepers can be counted without difficulty, of all races, even Europeans. Now it is proved that several lepers have landed there, coming from Africa or Asia as slaves or as coolie laborers. In British Guiana the history of leprosy is still clearer and more interesting. 1st period, prehistoric. The country was inhabited exclusively by Indian tribes. 2d period: European colonies established. No leprosy. 3d period. Slavery. Among the African slaves who were landed there a few were attacked with leprosy. They were rigorously isolated on the confines of the plantations, and the cases all remained limited to the blacks. In 1831 there were altogether 431; and a special establishment was founded on the banks of the river Pomeroon,

where they were all sent, But at this spot there were already established several tribes of Indians—Caribs, Accoways, Arrowacks, Warrows, etc. Disliking their new neighbors they all left the district except the Warrow tribe, who fraternized and had intimate relations with the lepers. In 1842 McClintock wrote: "We have taken a census of the whole Indian population. We have met with a great number of lepers of both sexes, but all invariably belonged to the Warrow tribe". This points to contagion. The Bovianders, hybrids of Negroes and Warrow Indians, are also frequently the subject of leprosy. This points to heredity.

In 1838 came the emancipation of the slaves, who spread themselves all over the colony, going wherever it seemed best for them and mixing freely with the general population. At about the same time the planters imported coolies from China and India, and among these, as usual, lepers were sometimes found. To-day there are two lepers per thousand of the population, and the whites and mulattoes furnish their contingent to the disease as well as the Negroes and Indians.

Some cases may be cited:

1. Cases of Dr. Regnaud, observed at Mauritius.

(a). A black woman, a widow with a child $\text{æ}t.$ 5 by her first husband, married again a man suffering from leprosy. The latter fondled the child a great deal and they were constantly together. The disease soon appeared in the child. There was no trace of hereditary leprosy in the woman or in her former husband.

(b). A white man acquired anæsthetic leprosy with ulcers. His wife assisted the doctor every day in the dressing. She was probably less careful in afterwards washing her hands. At any rate, a month after the death of her husband, a leprous spot developed on the right cheek, and two months later she was everywhere covered, and the disease grew worse.

A great many cases of this kind could be cited. Simple coincidences, they may be called, but in this case we should have to say that "the exceptions are more numerous than the rule."

2. A young Scotchman, born in Scotland, of parents who had never

left Europe and whose hereditary history was in every respect perfect, arrived at Guiana. One night, being drunk he had connection with a woman, whom he found to his horror the next day to be a confirmed leper. Ten months later he developed the first symptoms of leprosy, of which he died. (Drs. Manget, Edge, Watt).

The author knows several other similar cases, one of which was in his care.

. Joseph Francis C., æt. 20, Portuguese, white, born in Demarara, his parents still living and healthy. Ten years ago he was attacked by leprosy, the tuberculous form like the preceding. A sister, æt. 18, is also leprous. They were both vaccinated with lymph taken from an infant belonging to a leprous family. Their brother and three sisters, who were not vaccinated from the same source, are perfectly well.

The Drs. Manget, Army Surg. Gen'l., and Hillis, Physician to the Lepers' Asylum of British Guiana, who personally knew this family, consider the facts as absolute proof of the propagation of the disease by vaccination. It would be easy to quote others.

The cases of hereditary leprosy are numerous. Let it suffice to cite the works of Boek, Danielson, Carter, Hillis, etc. Here are a few facts borrowed from the last author.

(a). J. L'Esperance, confirmed leper at 2 years. Mixed form of the disease. Father and mother both leprous, the father having the tuberculous variety, the mother the anæsthetic. The mixed form usually only develops between the ages of 20 and 40 years.

(b). Marie B., æt. 43. Parents leprous. She herself still free from any manifestation of the disease, but she has six children from 10 months old to 14 years—all with tuberculous leprosy—which generally does not appear till after puberty.

(c). Dr. Saturnin (Trinidad) and the committee of the R. Col. of Physicians, of London, quote two cases of leprosy in the new born.

These facts without answering the requirements of Kaposi's eminent annotators, who desired to see a child born in Paris, of a leprous mother, and being immediately separated from her, afterwards becoming leprous, appear to us to shake somewhat the position of the adversaries of the hereditary transmission of the disease. How shall an af-

fection, which is propagated by heredity, by contact, by sexual intercourse, by vaccination, which shows itself most often on the uncovered part of the body, which takes on the skin a serpiginous course, be considered contagious or not? The same question might be as well asked with regard to syphilis, which is far from being contagious in all its stages, and which does always produce its hereditary character.

Finally it will be possible, we hope, to take up the experimental study of the question. For some time we have been trying the cultivation of the bacillus of leprosy in human blood. If pure cultivations are obtained, we shall have the opportunity of renewing the tentative inoculations by Neisser. It will also be interesting to study the bacillus of tubercle in this new medium.

P. S. ABRAHAM.

INDEX OF SURGICAL PROGRESS.

GENERAL SURGERY.

I. Malignant Anthrax. By Dr. A. Bois. M. B., æt. 65, a robust man of sanguine temperament, living in good hygienic surroundings, but recently much harassed, had for long carried a subcutaneous cyst, as large as a fowl's egg, at the lower part of the nape of the neck. After the fatigues of a long journey, a part of the skin covering the cyst became red and rather painful. As inflammation and suppuration threatened, he submitted to the removal of the cyst. Early in October an incision, several centimetres in length, was made, and the grumous, greyish, semi-liquid, foetid sebaceous contents removed. The interior of the sac was carefully cleaned, cauterized with a nitrate of silver pencil, and filled with plugs of lint. By degrees suppuration was established, and the cavity was again several times, and at sufficiently long intervals, cauterized, and fragments of the caustic left in the cavity, in order to ensure more certainly the exfoliation and adhesion of the secreting membrane. Towards the middle of November very little of the cavity of the cyst remained, but a small, hard and painful tumor appeared on the nape of the neck, a few centimetres above the part previously occupied by the cyst. It gradually developed and progressed towards the hairy skin, but not in the region of the cyst. It was evidently an anthrax, at first benign and developing slowly, and spontaneously suppurating after some days. It extended but little at the end of the month, and as it freely discharged under the influence of poultices, and gave but little pain, it was thought for some days that active intervention would not be needed. This abstention of active treatment seemed justified by the authoritative opinions expressed in 1881, at the Société de Chirurgie, in the discussion on the treatment of anthrax. Early in December the anthrax commenced to increase on the left side of the neck, at the same time mounting towards the scalp, and the regions

newly engaged began to take on a wooden hardness. The urine contained no trace of sugar. On the 5th of December it was ascertained that the centre of the tumor, for a space as large as a 5 franc piece, was boggy, and bled freely from numerous fine openings. It was the prelude of a serious slough, such as was seen several years ago in a similar case which rapidly terminated in death in spite of repeated and deep incisions. It was resolved to employ the thermo-cautery, after the method recommended by M. Verneuil—a plan which controls the hæmorrhage and modifies the development of the disease, more effectually than the incisions made with the bistoury. Twelve deep incisions, diverging in the form of a fan, were made under chloroform, with the instrument at a dark red heat. The limits of the affection being reached but not passed by the incisions. The anthrax, however, continued its invading growth, and on the 8th of December the cautery was again used. The incisions were prolonged 1 or 2 centimetres beyond the margin of the disease and this time its encroachment was definitely stopped. In the following days fragments of slough separated with abundant suppuration, and exposing a red and granulating surface. For some days sulphocarbonate dressings were used. The day after the second operation attention was called to a new focus of suppuration, which was rapidly developing in the middle of the dorsal region, and with a surrounding induration already reaching 5 or 6 centimetres in diameter. The patient was again chloroformed and eight or ten deep radiating lines were traced with the thermo-cautery, each one 8 or 10 centimetres in length. Here the effect was instantaneous. The second focus did not further develop, and the sore left by the operation took on a healthy aspect. But the infection of the system was not arrested. On the 10th of December a hard and painful swelling was manifest beneath the right deltoid muscle, without change of color of the skin. To combat it with the thermo-cautery did not seem possible, and tonic treatment had to be relied on. The deep inflammation extended and reached the inner part of the arm. The fever became more pronounced, and on the 15th deep fluctuation could be observed at the right deltoid. An incision gave issue to blood mixed with some threads of pus. The suppuration became well established by the in-

cision, and there was some temporary arrest of the general condition, as well as a rapid subsidence of the swelling. Death, however, ensued on the 21st of December.

Two facts are evident from this case: (1), that the thermo-cautery has an incontestible power in stopping the progress of anthrax, even when malignant, provided that it be used beyond the limits of the disease; (2), that an anthrax may for some days maintain a benign course, increasing insidiously and causing a false security, and then taking on suddenly the serious character of a disease beyond our resources in consequence of the septicæmia which it engenders.—*Progres Med.* Oct. 1885.

P. S. ABRAHAM (London.)

II. On Transfusion and Infusion. By Dr. LANDERER (Leipzig). Since 1880 L. has been investigating this subject experimentally and clinically. Alkaline salt solutions produce only transitory improvement where the loss of blood has been great, more than $4\frac{1}{2}\%$ of the animal's weight. A patient thus treated died one and a half hours later of a second collapse.

L. then used a mixture of one part defibrinated blood to $\frac{3}{5}$ parts alkaline salt solution, with better results. Loss of blood up to 5% might then be quickly recovered from. In a case of severe poisoning with nitro-benzol Thiersch let 900 cc. blood and replaced it by 1,000 cc. of this mixture, with a successful result—no fever or other customary sequelæ. The lesser amount of fibrin ferment introduced makes this method safer than when all defibrinated is employed.

Since, however, recent investigators all pronounce against the use of blood at all he has sought some substitute. Very favorable results were obtained by adding 3% of cane sugar to the alkaline salt solution. Animals repeatedly bled until only $1\text{--}1\frac{1}{2}\%$ of body weight in blood remained recovered rapidly and replaced the loss—as shown by counting the blood corpuscles—in an unusually short time (about fourteen days). Hæmorrhage in one patient was successfully treated by an infusion of 300 cc. This sugar salt solution has several advantages. It supplies a quickly available nutrient material, draws fluids with much

energy into the circulation from the surrounding tissues, has greater consistency, and increases the blood-pressure materially. In animals poisoned by nitro-benzol, chloral, chloroform, L. made a depletory venesection, and by infusing this mixture kept them alive—control animals dying. In cholera it would appear to be counterindicated. It is theoretically important that in poisoning it is not at all necessary to supply oxygen-bearers—red corpuscles.—Report of XV Congress of German Surgeons in *Centbl. f. Surg.* 1886. No. 24.

W. BROWNING (Brooklyn).

VASCULAR SYSTEM.

I. On Compression of the Innominate Artery. By Prof. THOMAS ANNANDALE (Edinburgh). Man, æt. 53, while lifting a heavy weight felt something give way at the root of his neck, and the same evening a pulsating swelling was noticed above the centre of his right clavicle. This occurred in April, 1884. On the 27th of May, 1885, the innominate was exposed by a median cervical incision so as to allow the finger to pass behind the vessel and press it against the sternoclavicular joint. An india rubber drainage tube half an inch in diameter was introduced and so adjusted that one end lay behind the artery and the other protruded from the wound. The intention was to leave the tube in position until the tissues had become accustomed to its presence and until the risk of a septic condition of the wound was diminished, and when the latter condition had been obtained, to introduce the small blade of a compressor, which Mr. Annandale had devised, into the drainage tube, and carry on compression of the artery more or less continuously, according to the effect produced. On the 7th of June, however, there was some blood on the dressing. Next day there was profuse bleeding and the artery was compressed by the finger. Several attempts to pass a ligature between the bleeding part and the aorta failed, but the compressor was applied and the bleeding stopped. The patient died in five hours. The innominate was found to have ulcerated just below the bifurcation from pressure of the tube, and the trachea showed signs of commencing absorption. The author thinks that in future compression might be applied by the finger, or an instru-

ment, through an incision, while the patient was under an anæsthetic. Such compression should not be too continuous and should be combined with distal ligature or compression, or if thought advisable, electrolysis.—*Lancet*, March 13, 1886. [See an account of ligature of the innominate by the reporter in the American Encyclopedia of Surgery, or, with a report of all cases, in Brit. Med. Journal, October 14, 1882.]

II. Popliteal Aneurism in an Ataxic Subject Cured by Pressure. By Dr. LONGHURST (London). Patient, æt. 51. An Es-march's bandage was applied to the limb for an hour and a half; then a screw tourniquet to the femoral, and so on during the day. Pressure was omitted at night. A shot bag weighing $11\frac{1}{4}$ pounds was tried instead of the tourniquet, and this treatment was pursued for the next two days. On the evening of the third day no pulsation was visible. The pulsation did not return.—*Med. Press and Circular*. March 31, 1886.

III. Traumatic Inguinal Aneurism. By C. MANSELL MOULIN (London). Man, æt. 34. Four weeks before admission received blow in the groin from edge of flat piece of iron. Swelling and discoloration followed and disappeared, but three weeks later the swelling recurred and continued to increase. During an effort, immediately before admission, he was seized with violent pain and a large pulsating tumor made its appearance in the groin, extending into the scrotum and perineum. An abdominal tourniquet was applied and the swelling opened over the femoral artery, in which a slit was found immediately below Poupart's ligament. The artery was tied below this point. The external iliac was then tied. The man recovered and pulsation could be detected in the posterior tibial four months later.—*Lancet*. March 6, 1886.

IV. Traumatic Aneurism Caused by Punctured Wound of Buttock. By JOSEPH LITTLEGOOD (Nottingham). Boy, æt. 16. Received accidental wound in left buttock posterior to great trochanter. A pulsating tumor was noticed on the fourth day and rapidly reached the size of a cocoanut. On the eighth day the wound was rapidly enlarged, but so great was the hæmorrhage that it was necessary to apply an abdominal touringuet. The distal end of the artery

was found without difficulty and tied; the proximal end was found after a long search, just within the great sciatic notch. The patient recovered.—*Lancet*. March 27, 1886.

WM. THOMSON (Dublin).

HEAD AND NECK.

I. A Case of Cerebral Abscess Subsequent to Orbital Periostitis. By CRAWFORD RENTON, M.D., (Glasgow). The patient, a boy *æt.* 12, was admitted to the Glasgow Eye Infirmary suffering from symptoms of right orbital cellulitis, which had persisted for ten days. On the sixth day after admission a free incision was made along inner side of upper eyelid, a considerable quantity of pus was evacuated and drainage tube inserted. Four days afterwards the discharge had ceased, the swelling gone, and the patient had become almost convalescent. Two days after this note was made, however, he complained of severe pain in the head, intermittent in character, and most severe over the right temporal region. Vision normal; ophthalmoscopic examination showed a normal fundus. No evidence of any fresh formation of pus in the tissues around the eye, but the wound was re-opened and a probe passed along it, but without detecting any bare bone; the drainage tube was re-inserted. Ice applied to the head and small doses of calomel given internally. Pulse 64; temperature normal. The symptoms continued for some days, and vomiting set in. But ultimately the pain and vomiting subsided, and complete relief ensued. After, however, four days of relief, the symptoms again recurred and death subsequently took place, being preceded by spasms of the left side which rapidly became general. The temperature was never higher than 99° and the pulse varied from 76 to 52. Post mortem examination showed extensive necrosis of the right orbital plate, and an abscess occupying the anterior half of the right frontal lobe. There was no direct communication between the pus from the orbit and the cerebral abscess, and the dura mater was only inflamed over the necrosed portion of the orbital plate. The right eye was healthy. Two secondary diseases, the author remarks, follow suppuration in the orbit—meningitis and abscess. The diagnosis in this case was difficult, the symptoms pointing chiefly to meningitis.

H. PERCY DUNN (London).

II. On the Operative Treatment of Empyema of the Antrum Highmori. By J. MIKULICZ (Cracow). Heretofore in this affection the artificial opening, when needed, has been made through some point in the roof of the oral cavity. This method has the advantage of perforating the antrum at a point easily accessible and favorable for drainage. It has, however, disadvantages. The opening is not always permanent enough, since suppuration frequently lasts for months or years; and if a sufficiently wide opening is obtained bits of food pass in too easily and keep up the suppuration. The most rational procedure would be to re-open the natural passage into the nasal cavity as proposed long since by Hunter. Although this is hardly practicable yet it is not difficult to penetrate the antrum from the lower nasal passage at the level of the inferior turbinated bone and thus open a wide lasting communication with the nasal cavity. The inner wall is thin as paper at this point and can be easily bored through with a sharp cutting instrument. M. uses a special short-bladed stylet with a properly curved handle and a little flange to prevent the blade sinking in too deeply. This is passed into the nostril with the point downwards, and when at the inferior turbinated bone the point is turned outwards to get up around the bone. With a vigorous stab the antrum-wall is perforated and as much of a piece cut from it as possible. By preserving a direction downwards and forwards no harm can be done as the wall here becomes thicker, and resists the instrument. In this way a slit 5 to 10 mm. wide by 20 mm. long is produced. Too free hæmorrhage can be controlled by tamponing with iodoform-gauze for a day or two. After-treatment consists in washing out the antrum with a balloon-syringe having a nozzle bent like the above-mentioned stylet. M. finds the operation easy to execute on the cadaver. An abnormally narrow nostril or an overthick turbinated bone might be too great an impediment. This operation he has performed once successfully on a man æt. 33. The patient made the injections himself from the fifth day, twice a day for four weeks, and has remained cured now for six months.—Report of XV Congress of German Surgeons in *Centbl. f. Chirg.* 1886. No. 24.

W. BROWNING (Brooklyn).

III. Tonsillar Abscess, Œdema of the Glottis and Tracheotomy in a Child Æt. 1. Recovery. By Dr. F. KATTERFELD (Curland). Author reports following case: Male child, æt. $11\frac{3}{4}$ months, admitted in a state of great dyspnœa, which had developed after an attack of measles. On examining the cavity of the mouth both anterior palatal arches were found highly congested and swollen, as were also the tonsils. On these latter were yellowish brown crusts which were easily removed. Externally on both sides of the neck there was a large swelling, rather tough in consistency, in the region of the angle of the lower jaw. These phenomena were more fully developed on the left side. No œdema of the glottis. When pressure was made with the finger on the base of the tongue, there escaped from the anterior part of the left tonsil a quantity of yellowish, non-offensive smelling pus.

Respiration somewhat difficult. Slight febrile movement only. This condition was followed in a few days by great dyspnœa on inspiration, showing that the swelling, until then only subchordal in its character, had now involved the glottis. Cricotracheotomy, according to Schinzinger's method. After this the temperature rose slightly, but fell to normal in three days, and the swelling of the tonsils decreased steadily. No return of the glottis œdema. Appetite good and general condition much improved. This satisfactory course was interfered with, however, owing to the development of an acute catarrh with considerable febrile movement and return of the dyspnœa. The latter ceased after a quantity of bloody muco-purulent matter and granulation mass had been expectorated. A shorter and thinner canula was then introduced and applications of a $1\frac{1}{2}\%$ solution of arg. nitric. to the ulcerated spot in the larynx were made. Recovery soon followed.

Cases of tracheotomy with recovery in children under one year of age are very rare, G. Chaym having found not more than forty cases in searching through all the literature on this subject.—*Deutsch. Med. Wochenschrift*. No. 28. July 15, 1886.

IV. Two Cases of Stenosis of the Larynx as a Sequel to Typhoid Fever. By Dr. K. ORTH. Case I. Patient, male, æt. 42, suffered much in his childhood with articular rheumatism and

attacks of colic. Had a general tendency to bronchial catarrh, and eight years before had dysentery. About five months previous to his admittance, severe attack of typhoid fever, lasting ten weeks, during which some difficulty in breathing had developed. Since then several attacks of dyspnoea, which are becoming worse. Respiration labored. Voice rough and hoarse, not aphonic however. Pressure on the cricoid cartilage painful. On examination with the laryngoscope the mucous lining of the larynx found intensely injected and swollen. The glottis appeared much narrowed, and at about the level with the true vocal cords two congested and swollen prominences discovered. Tracheotomy superior at once undertaken. Examination again nine days later. Mucous membrane less swollen, but the stricture is about the same. On closing the canula patient could breathe but for a few seconds only through the mouth. On comparing the conditions during respiration and phonation, it was shown that the swellings causing the stenosis did not lie in the plane of the vocal cords, but lower down. Diagnosis was, therefore, perichondritis of the anterior portion of the cricoid, to which the previous attack of ileo-typhus, the pains on swallowing and on palpation of the parts, and finally the result of the laryngoscopic examination all pointed. Daily introduction of laryngeal catheters, the size being gradually increased, and applications of arg. nitric. to the swelled parts once or twice weekly. Insufflations of alum sufficed to allay any symptoms of irritation from the use of the catheters. In the course of a few months of this treatment, Schrötter's thick laryngeal catheter (No. 5) could be introduced. A few weeks after beginning the treatment patient was able to breathe for half an hour with closed canula, the stenosis being so much reduced. In ten months time he could work the whole day with the canula closed, but was obliged to have it open while sleeping. Canula was withdrawn about fourteen months after commencement of treatment. Voice was then clear and respiration perfectly easy.

Case II. Patient, girl æt. 19. Admitted in July, 1882. Typhoid fever in March, April and May of same year. About two weeks after commencement of this latter illness, pains in the neck and larynx set in, accompanied by difficulty in swallowing. After the disease had

subsided patient was in wretched physical condition. There was complete aphonia and occasionally pain in the larynx. Difficulty in breathing began about four weeks before seen. These attacks of dyspnoea are at times very bad. When admitted respiration labored. Stenosis-murmurs heard over whole chest. The following day sudden orthopnoea during meal. Sinapism gave some relief. Dyspnoea became so great, however that tracheotomy superior was undertaken. Examination with laryngoscope eleven days later. The left arytenoid cartilage and plica aryepiglottica very much swollen and œdematous. The two false chords overlap one another, covering every part below. In the anterior parts there protrudes between the false chords a smooth, round portion of tissue about the size of a pea. Attempt to use the larynx-sound was very painful and its introduction impossible. Scarifications of the left arytenoid cartilage and aryepiglottic folds. Patient discharged in October following. During the first few weeks of her subsequent treatment the throat was kept warm and cataplasms occasionally applied. Insufflations of alum made twice weekly. Under this treatment swelling and œdema of the parts became less. No signs of an abscess in the larynx were observed. At the beginning of March in the following year all inflammatory symptoms had subsided. On examination both arytenoid cartilages found normal, also the aryepiglottic folds. The false chords still swollen and the small protuberance of tissue between these still remains. Applications of arg. nitric. two or three times weekly to these parts. Cavity of the larynx appeared to be completely obliterated. In the following August sound passed for the first time. It was then ascertained that the cavity of the larynx was not obliterated as supposed, but its lumen reduced to a minimum. The introduction of catheters now ordered, together with the local applications. In October a very thin English catheter (No. 9) could be passed, and patient could breathe through this when canula was closed. In November (1883) patient was able to force some air through the larynx and say "good morning" in a croaking voice.

This treatment has been kept up ever since. In December, 1885, she was able to close the canula for fifteen to twenty minutes at a time. In speaking the help of the false chords is necessary and the voice is somewhat stronger. Patient is still under treatment.

The case was undoubtedly one of perichondritis of the arytenoid cartilages (principally of the left), and also of the cricoid.—*Deutsch. Med. Wochen.* No. 29. July 22, 1886.

C. J. COLLES (New York.)

ABDOMEN.

I. Surgical Intervention in Certain Cases of Biliary Calculus. By T. THIRIAR. The origin of biliary calculi has never yet been clearly explained. Dr. Thiriar holds that they only form where bile stagnates, and when from sedentary life, advanced age, or pregnancy the bile becomes less alkaline and so permits of a deposit of cholesterine. Thus they may only be expected to form in the smaller bile ducts when the main ducts are obstructed from any cause. In 6,000 post-mortem examinations made by Prot. Wehenkel, of Brussels, no instance was found of the formation of gall-stones within the liver. The gall-bladder is therefore taken as almost necessary for the formation of gall-stones, and its removal is held to be a radical cure against them.

The paper begins with a brief sketch of the history of cholecystectomy. Three cases then related. One was performed by Dr. Langenbuch, of Brussels, and was pronounced cured in nine days. The other two were done by Dr. Thiriar himself. One was practically healed in six days after the operation, in the other hysterical symptoms appeared in the patient before and after the operation: these subsided and in two or three months she was doing well. The subsequent history of these three cases is not related in detail, but they seem to have made good recoveries, and to have been afterwards relieved from all the previous attacks of biliary colic. In another place the author refers to the two first cases of the operation performed in July, 1882. Three years after, in July, 1885, the patients were in excellent health, except that one had been unable to shake off a habit of taking morphia, although the need for it had ceased.

Mode of operating. (1) For 48 hours before, the operating room is kept at a temperature of 30°C (86°F). (2). About one hour before the operation the patient receives an enema containing 1-2 grms. (1/4-

$\frac{1}{2}$ dr.) of laudanum, and 2-4 grms ($\frac{1}{2}$ -1 dr.) of chloral. The patient is bathed a few days before, and shortly before the operation the abdomen is washed first with soap and water, then with ether and carbolic lotion. During the operation a carbolic spray is used. The cut surfaces are washed with 1 to 1000 corrosive sublimate. Sponges are replaced by sublimated wool tampons; instruments and hands are disinfected. Incision follows outer border of right abdominal muscle (Rectus). Muscular fibers are cut transversely three fingers' breadth below false ribs. After adhesions with the colon are broken down, the gall-bladder is seen. The cystic duct is then isolated, ligatured with silk in two places and divided. The margins of the opening in the duct are carefully sewn together with fine sublimated silk. The gall-bladder is removed and the abdominal wound closed. Catgut stitches are used, and some stress is laid on the importance of uniting like structures together, thus peritoneum to peritoneum, fibrous and cellular tissue to fibrous and cellular tissue each to each. The shock of the operation is much lessened by the enema of laudanum and chloral, as the opium soothes and diminishes muscular sensibility, and the chloral specially lessens the irritability of the spinal cord. This enema is always used in the author's ovarian cases.

The operation of cholecystotomy is contrasted with that of cholecystectomy, and objections to the latter are examined. The difficulty of the latter operation is considered no obstacle, as it is no greater than any surgeon may be expected to overcome, and less indeed than that of ovariectomy and of hysterectomy. Neither is the larger extent of incisions considered of moment when antiseptics are used. As to danger, out of the 7 cases on record (5 by Langenbuch and 2 by Thiriar) there are no deaths which can be attributed to the operation; two of the patients died not long after their operations, but one death was the result of a cerebral tumor, and the other of ulceration of the bile duct from the presence of a calculus in it.

Is removal of the gall-bladder efficacious? From the view he holds of the origin of gall-stones Thiriar believes that it is. So far also as the cases go they confirm his opinion.

When should the surgeon operate? The gall-bladder should be re-

moved when efforts to hasten the flow of bile and to increase its alkalinity have failed to relieve attacks of biliary colic. Cholecystotomy is not to be used, because it does not make a radical cure, because if a ligature slips shortly after the operation bile might escape into the peritoneum, and because biliary fistula delays the cure and allows bile to leave the body.

If it were said that the presence of a gall-bladder is necessary, Dr. Thiriar would reply that some animals, such as the elephant and the horse have none; that from some animals it may be experimentally removed with impunity; and that in man it may be wanting, atrophied or obliterated without bad results.

Thus the indication for cholecystectomy is a frequent return of severe biliary colic which has resisted medical treatment.

When a calculus blocks the cystic duct and causes dropsy of the gall bladder, the distended bladder is to be aspirated, and, if this fails, it is to be excised. When the common bile duct is blocked, causing persistent jaundice, and when the diagnosis has been established, the abdomen is to be opened and an effort made to crush the stone through the walls of the duct, and failing this the duct may be incised to remove the calculus and the edges of the cut sewn up again. If this also fails Cholecystotomy is to be performed and an effort made to establish a biliary fistula into the intestine.—*Révue de Chirurgie*. March. 1886.

CHARLES W. CATHCART (Edinburg).

II. On the Operative Treatment of Abscess of the Liver.

By DR. KARTULIS (Alexandria). In Thierfelder's collection of cases of abscess of the liver treated by operation we find that of 10 cases operated by Curtis; but two recovered; J. Clark operated in 13 cases with 8 cases of recovery, and only 6 of Murray's 17 cases were cured. Warring collected 81 cases of operation with but 15 cases of recovery, showing a mortality of 81%. De Castro reported that of 61 cases operated 27 died, or 44.26%. Heinemann (Vera Cruz) treated 2 cases by puncture, both with fatal results, and of 20 cases where Potain's aspirator was employed, but 2 recovered.

The introduction of antiseptic principles in surgery formed a new era in the treatment of this disease. Lister, in 1878, was the first to open an abscess of the liver with the knife, under the observance of antiseptic rules, the result being satisfactory. The reports of the hospitals in Egypt, however, do not show that the results of opening these abscesses under strict observance of antiseptic precautions are very much better than formerly, nor do the reports of English surgeons in India tend to encourage this mode of treatment, but rather recommend the use of the trocar.

The author considers these unfavorable results to be largely due to the retention of pus in the cavity of the abscess, through defective drainage, leading consequently to pyæmia, hectic fever, etc. To obviate this defect he was induced first in the following case, to undertake resection of the rib, thus giving free vent to the discharge, and undoubtedly thereby saving his patient.

The patient, a man, æt. 30, was healthy until 20 days before admittance, during which time he had had much distress in the region of the liver, with fever. Nothing showing the presence of an abscess formed, however, and a change of climate was advised. A month later he returned with undoubted symptoms of abscess of the liver. Puncture in the 6th intercostal space performed twice, there escaping each time about 500 c. cm. of pus. No improvement. Incision then made, giving vent to 400 c. cm. of pus. The cavity, 12 cm. in depth, washed out with a $2\frac{1}{2}\%$ solution of carbolic acid, a drainage-tube introduced and antiseptic dressings applied. Although the patient's condition improved somewhat during the first few days after the operation, change for the worse set in, owing to defective drainage. Two weeks later, therefore, 3 cm. of the 7th rib was resected, giving vent to a large quantity of bad smelling pus. Recovery was then rapid, the cavity being completely closed 19 days later.

In the author's second case, the patient, æt. 30, had complained in the region of the liver for five weeks previous to operation. Liver found much enlarged and painful to touch. Patient very weak. Puncture with trocar in the 10th intercostal space, allowing the escape of 400 c. cm. of thick pus. Considerable relief was experienced by the

patient after this, and he was able to sleep for the first time in many days. No movement of bowels, and tenderness on pressure remained as before. Four days later puncture was again made, some 270 c. cm. of purulent matter escaping. Patient easier after this, but still very weak and exhausted. His condition becoming worse, however, accompanied by high fever, resection of the rib was undertaken on the 7th day after his admittance. Incision over the 9th rib, 10 cm. in length, in the axillary line, and 5 cm. of rib resected. The abscess was then easily opened, giving vent to a large quantity of pus. The cavity, 15 cm. in depth, was washed out with a 5% solution of carbolic acid, two drainage-tubes introduced, and antiseptic dressings applied, the whole being covered by a Martin rubber bandage. Five hours after the operation the patient was without fever and in the best of spirits. Recovery was rapid, the cavity being completely filled up on the 10th day, and two days later the bandage was left off. No reaction in the wound took place, change of dressings showing these each time to be odorless.

Dr. Zancardt, in Alexandria, has also treated a number of cases in a similar manner, and with the same favorable results.

The author thinks the chief danger in carrying out a resection of the rib, lies in the possible injury to the diaphragm, which may be incised according to the position of the abscess, when no adhesions have formed. He advises then resection of two or more ribs and drainage of the cavity of the pleura. As a rule, however, the operation presents no complications as adhesions are generally present, owing to the increased size, etc., of the liver. Abscesses of the left lobe are more rarely met with and usually much smaller than those of the right lobe. They heal often after one puncture. Author advises, in cases where larger and deeper abscesses are present with no adhesions to let the canula remain for some time, under observance of antiseptic precautions, incision of the abscess to be eventually carried out.

In abscesses of the right lobe, on the other hand, incision should be undertaken at once in connection with resection of the rib. We should not wait for adhesions to form, as such a delay is of too great a risk for the patient.—*Deutsch. Med. Wochensch.* No. 26. July 1. 1886.

III. A Case of Penetrating Pistol-Shot Wound of the Abdomen. Resection of the Intestine. Recovery. By Dr. M. FREYER (Darkehmen). The operation in the following case was undertaken under very unfavorable circumstances, little or no assistance being obtainable:

Patient, male, æt. 19, suffering from pistol-shot wound in the abdomen. When first seen by the author six hours after the accident, he was in a greatly collapsed state. On examination a large loop of intestine was found protruding through the wound, this latter being situated above the anterior superior spine of the right ilium. On nearer inspection several small openings in the protruding intestine were discovered, through which fecal matter was oozing. Resection determined on. In order to prevent the feces from entering the abdominal cavity, a roll of twisted cotton-wool wetted in carbolized water was placed around the neck of the loop of intestine, which was drawn further out and excised. Hæmorrhage from mesenteric vessels considerable. The mesentery was first sutured and then the ends of the divided intestine. In suturing the latter serosa was united to serosa, the mucous edges in this way turning inwards of themselves. Twenty stitches were made, fine silk being used, as also for the ligatures. For the restoration of the intestine it was found necessary to enlarge the wound somewhat. This allowed the removal of several small shot found lying in the torn and ragged peritoneum near the wound, and also of a piece of paper wadding. On turning the patient over on the wounded side a large quantity of clear serous fluid escaped from the wound. The lower part of the abdomen was much distended and very sensitive to touch. Wound not closed. Three rubber drainage tubes introduced and antiseptic dressings applied. Patient next seen two days later. Pain was relieved by opium. Only slight amount of fever. Pulse 120. Dressings removed and wound looking well. Abdomen less sensitive. Irrigation with solution of salicylic acid. On the third day stool per anum. General condition very fair. On the sixth day fecal matter was found on the dressings, a fistula having formed. Stools passed regularly per anum, however, excepting on the seventh and eighth days. Edges of wound painful and red. As soon as the ne-

crossed portions of these latter had been cast off, definite closure of the fistula was undertaken seventeen days after it was formed. Three pieces of good-sized catgut passed through the whole depth of the wound and tied on both sides over strips of adhesive plaster. Ten days later two more sutures, this time silk being used, were introduced in the same manner, the right thigh being placed in suspension, in order to relieve tension. It was found necessary, however, to repeat this procedure three times more before closure of the fistula was obtained. Patient recovered completely by the forty-eighth day and returned to his hard work.

On examination the excised portion of the intestine was found to be part of the ileum.—*Deutsch. Med. Wochenschrift*. No. 28. July 15, 1886.

C. J. COLLES (New York).

IV. Colotomia Iliaca. By Dr. A. PODREZ (Harkoff, Russia). In his Surgical Clinic Dr. P. had a patient on whom he performed *colotomia iliaca*, somewhat modifying the method of Madelung.

Mrs. T. K., æt. 45, for four years was suffering from carcinoma coloides in the rectum, which, starting from a point above the second sphincter had extended above the third sphincter and reached, the adjacent parts of flexura sigmoidea. In January, 1885, Dr. Podrez had performed on his patient *extirpatio recti radicalis*, preserving the the sphincter externus. The patient recovered and for about a year had normal passages; she felt herself well and attended to her home duties. At the end of October, 1885, there appeared again all symptoms of carcinoma, pain, constipation, insomnia, loss of appetite, and cachetic coloring of skin. On January 14, 1886, Dr. P. performed colotomia iliaca, all necessary precautions being observed, including a properly disinfected operating room. A cut was made 8 cm. long, parallel to crista ilei sinistr., 1 inch above Poupart's ligament. The opening in the peritoneum was 5 ctm. long. The edges of peritoneum were attached to those of skin by sixteen deep and fourteen superficial silk sutures. Putting aside the omentum and some loops of the intestines, the descending colon was found and drawn out. It was fixed by silk ligature and then cut through. The lower end was washed in 5

per cent. solution of boracic acid, and its walls were sewed by sixteen sutures according to Czerny, and then it was dropped into the abdominal cavity. Then the mesocolon was dressed and also put into the abdominal cavity. At last the upper end of the colon was fixed in the opening, in which operation there were made forty-eight sutures. A rubber drainage tube was introduced into the intestine and the wound was properly dressed. The operation was bloodless and lasted about three hours. Ice and opium were prescribed to the patient. On January 18 and 20 she had small passages. For some days she was suffering from nausea and vomiting. But on January 19 she was already able to take scraped meat and eggs. On January 22 the patient was allowed to lie on the side, and all the sutures (accessible) were removed. January 26-30, the appetite and sleep were good, and daily passages. February 10—the wound is perfectly cicatrized; the edges of intestine and skin are well united. March 5—a cancerous infiltration was found around the anus; on March 10 a large mass of pus and cancerous fragments were removed *per anum*. March 20 the patient gets up from her bed. Her general condition is rapidly improving. At the time this report was given, April 8, the patient was in a very good condition. Dr. Podrez believes that in case the rectum is affected with cancer, colotomia iliaca is properly indicated.—*Chirurgichesky Vestnik*. May and June. 1886.

P. J. POPOFF (Brooklyn).

EXTREMITIES.

I. Spontaneous Phlebacteriektasia of the Foot. By A. G. GERSTER (New York). Robert Klaile, æt. 14, a well-developed boy, was admitted to the German Hospital, July 2, 1885, on account of a number of rebellious ulcers situated on the dorsum of the left foot. The condition was said to have existed since childhood; no injury was remembered. Physical examination of the internal organs revealed their normal state, with the exception of the heart, which was found to be enlarged, and evidenced a marked increase of the energy of its pulsations. The femoral arteries of both sides were found to beat with unusual strength, and, when somewhat compressed, gave rise

to a strong whirr, both to be felt and heard by the stethoscope. On inspection, an increased size of the left foot became manifest, the hypertrophy pertaining to the soft parts as well as to the bones. The length of the right foot was 24 centimetres, that of the left 25 centimetres. Their circumference was 23 and 24 centimetres. The dorsum as well as the sole of the left foot was occupied by a doughy, soft, nodular swelling of irregular and not well-defined outlines. The skin of the plantar surface was normal, but on the dorsum, along the course of the saphenous nerve, a series of roundish, irregular, rather hard, dark blue, partly confluent nodes could be seen. They were partly covered with a thick layer of rough epidermic scales, partly by a closely adherent dry scab. Attempts at removing this were followed by rather copious capillary hæmorrhage. Their general aspect was that of teleangiectatic nodes. A number of enlarged veins surrounded these nodes, and could be plainly seen through the skin. If pressure was exerted on the swellings, they could be made to disappear, or at least diminish in size, and also a deep-seated pulsation of the whole mass became at once evident. Compression of the femoral artery promptly suppressed the pulsation, and while the compression of the main trunk lasted the swelling did not resume its former size. On the other hand, if the artery was compressed while the tumors were turgid, pulsation ceased, but there was no appreciable decrease of the size of the swelling to be observed. The stethoscope gave evidence of a strong arterial bruit all over the swellings. There was a marked difference in the temperature in favor of the left foot.

It seemed clear that we had to deal with a mixed angioma, containing the elements of both a cirroid aneurism and of teleangiectasia with phlebektasia. As there was no history of a gross lesion of the blood-vessels, a chronic inflammatory alteration of the entire vascular apparatus of the foot had to be assumed, which by this time had also reacted upon the femoral arteries and the heart, inasmuch as they too were found to be hypertrophied.

Ar ablation of the diseased part was proposed, but declined, wherefore having explained the not inconsiderable danger of a deligation of the main artery, and having vainly tried elastic compression for a con-

siderable time, the patient was anæsthetized on July 7, and the superficial femoral artery was tied in Scarpa's triangle. Pulsation ceased for a time, but became faintly but clearly noticeable about ten minutes after closure of the vessel, whereupon the external iliac artery was exposed and tied. Pulsation did not return after this. The wounds were closed, not drained, and the limb was enveloped in a thick swathing of cotton batting.

The course of the healing of the wounds was undisturbed and feverless, but the circulation in the limb became so depressed that serious apprehensions were entertained in regard to its preservation. The toes, especially the first and second, were cold and livid, their sensibility was destroyed, and in the course of the first week necrosis of the integument of the terminal phalanges became manifest. At the same time the skin on the outer and posterior aspect of the limb, exactly over the course of the peroneal muscles, sloughed, and on being removed, necrosis of the entire belly of the peroneus longus was ascertained. A fortnight after the operation, the muscle was removed. It had the aspect of a pale, waxy, translucent substance. There was hardly any suppuration, and it was deemed advisable not to leave the sequestration of such a large mass of tissue to the rather uncertain and risky efforts of nature. The toes were also removed. The patient was discharged cured in October, and no pulsation or increase of the tumors were noted at the time. The size of the swellings was somewhat smaller than before the deligation, but there was no hardening or marked shrinking such as would follow obliteration; on the contrary, the dough-like consistency had remained unaltered.

Patient was readmitted to the hospital in January, 1886. Pulsation had returned, and was just as evident as before the operation. The teleangiectatic spots were all supplanted by ill-conditioned ulcers. The metatarso-phalangeal joint of the great toe was open and suppurating, and the boy complained of much pain and discomfort due to the ulcers.

Pirogoff's amputation was done January 29 1886, with the aid of Es march's band; the sections of an unusual number of large vessels, twenty-seven, were taken up and tied before; eleven more ligatures

were applied after the removal of the constriction. The segment of the calcaneum was nailed to the tibia, and the wound closed by an interrupted catgut suture. Drainage was effected through a counter-opening made alongside of the tendo Achillis. The first dressing was removed twenty-one days after the operation, and the wound was firmly united, except along a small portion of the suture, where the rather fine catgut had been absorbed too soon. This narrow strip of granulation, together with the track of the nail, was found cicatrized over five days later, when the second dressing was changed.

The patient has a good stump, and walks on it without support.

A very excellent anatomical study of a case of considerable magnitude, by W. Krause, will be found in the second volume of Langenbeck's *Archiv*, published in 1862. Nicoladoni has also reported three cases, two in vol. 18, pp. 252 and 711; the third one in vol. 20, p. 146, of the same periodical. All, with the exception of one reported by Nicoladoni, were affections of the upper extremity, which is said to be the favorite site of the disorder. Both cases seen by me involved the foot, one the left, the other the right. I may add, that the other case presented, especially as regards the local appearance and situation of the malady, an almost identical state of affairs as the case before you, only of less development.

As regards the treatment, the case presented bears out the experience of others, inasmuch as it demonstrates the futility, in the more extensive cases, of less radical measures than ablation.—*Proceedings New York Surgical Society*. March 8, 1886.

GENITO-URINARY ORGANS.

I. Supra-Pubic Lithotomy. By N. A. SOKOLOFF, M.D., (St. Petersburg). Stone in the bladder is a rare disease in the capital of Russia. Dr. S. had only four cases of that disease during two years in the Mary's Hospital. On his patients he performed supra-pubic lithotomy. Bladder was distended with 4% solution of borax.

Case I. Male, æt. 25, was suffering from calculus for twelve years. November 29, 1883, operation. December 15, urine is discharged through the urethra, and only a few drops through the wound. January

10 to 29, 1884, slight symptoms of pyelitis. February 21, wound is closed, and the patient was discharged as cured.

Case II. Male, æt. 18, was suffering from calculus since childhood. March 5, operation. April 18 was discharged as cured; the wound was perfectly cicatrized.

Case III. Male, æt. 9. July 20, 1885, operation; stone was of size of pigeon's egg. July 22, urine passes through the wound which was sutured; sutures removed and drainage tube introduced. Fever. August 14, urinates normally. September 21 to October 2, fistule now is closed and now open again; closed permanently November 7. In January, 1886, wound was cicatrized, and the patient left the hospital.

Case IV. Male, æt. 22, was suffering from calculus since childhood. On examination in the bladder were found two large stones and several small ones. June 25, 1885, operation; one stone $1\frac{1}{2}$ cm. removed, the other broken. The wall of the bladder attached to that of the wound. July 7, a stone is removed through the openings; cystitis. Fistule continued up to September 2. September 16, wound is cicatrized and the patient was discharged as cured.—*Chirurgichesky Vestnik*. May and June, 1886.

P. J. POPOFF (Brooklyn).

II. Lesions Caused by the Presence of the Eggs and Embryos of "Bilharzia Hæmatobia" in the Bladder, the Prostate, the Rectum, the Mesenteric Glands, the Kidney and the Liver. Dr. Albert Ruault presented to the Anatomical Society in March, 1885, microscopical preparations of the above organs, taken from two subjects who had succumbed to the complications of calculous cystitis. In the sections of the bladder a great number of the eggs of the distoma can be seen in the substance of the bladder wall which is considerably thickened. The eggs are particularly abundant in the mucous coat and immediately below it. The thickening of the organs seems to be due to an abundant formation of connective tissue. There is also some alteration of the muscular fibres, but it is not clear whether the degeneration is vitreous or amyloid. In the prostate also there is a certain quantity of the distoma eggs, and there

is much connective tissue of new formation. The section of the rectum shows a large number of the eggs in the mucous membrane. The alteration appears to be but little advanced, and there are no dysentery-like ulcerations to be seen. The section of the kidney exhibits some of the eggs and also free embryos. Around the eggs connective tissue of new formation is seen producing an interstitial nephritis of vascular origin. In the liver the ova are situated in the neighborhood of the portal spaces, or in those parts of the hepatic lobules nearest to the spaces. As M. Kartulis says, the retraction of the liver caused by the deposit of the distomum eggs seems to be due to a cirrhosis. The cirrhosis is evident in the preparation.—*Progrès Medical*. July, 1885.

P. S. ABRAHAM (London).

ABSCESES, TUMORS.

I. On Draining Pelvic Abscesses by Trephining the Ilium. By Dr. RINNE (Greifswald). This is a report of two cases of very tedious pelvic abscess rapidly cured by G. Fischer's method of drainage through the ileum. The first case was that of a man *æt.* 26, who in childhood suffered from coxitis ending in ankylosis. In the earlier years of the coxitis he developed a pelvic abscess (by perforation of the socket); this for fourteen years had kept up a fistula on the front of the thigh. Operated three and a half years ago; cure in three months. The second case was that of an otherwise healthy girl who for eight years had suffered from suppuration of the flange of the left ilium, probably in consequence of non-tubercular osteitis. After lying two years it broke spontaneously a hand's breadth below the spina anterior sup. Repeated drainage of the abscess cavity through the long narrow resistant sinus secured temporary closure, but never cured the abscess. Operated in 1885; cure in nine weeks. Large subperiosteal abscess in the internal iliac fossa, filled with granulations and scant pus.

R. makes an antero-posterior incision through the musculature three finger breadths above the large trochanter, and chisels through the os ilii so that a finger can be readily introduced. The procedure is not dangerous; it is valuable where a cure is not effected through the

usual perforative opening.—Report of XV Congress of Germ. Surgs. in *Centbl. f. Chirg.* 1886. NQ. 24.

WM. BROWNING (Brooklyn.)

II. The Role of Parasites in the Development of Certain Tumors. Fibroadenoma of the Rectum Produced by the Eggs of Distomum Hæmatobium. By Dr. V. BELLELI (Alexandria, Egypt). The hypothesis that many tumors have a parasitic origin every day acquires greater probability. Already it is beyond doubt that all granulation growths (tubercle, glanders, farcy, lupus) are the consequence of the development of a special parasite. The question is still open as regards the bulky "tumours" which are really worthy of the name. The discovery, however, of actinomyces in certain sarcomas opens a large field of study, and justifies researches directed with this view. Hence the interest in the development of certain tumors, typical in form and histological structure, under the action of a parasite very common in Egypt, the "distomum hæmatobium" or "Bilharzia hæmatobia."

It is known that the adult animal which lives in the portal vein and vesical veins, deposits its eggs chiefly in the little veins in the neighborhood of the intestines and of the bladder. The dimensions of the eggs, 160 μ long and 60 μ broad, hinder them from reaching the capillaries. They are stopped in the small veins which are subsequently lacerated by the efforts of the "vis a tergo." Some of the eggs are thus set free in the intestinal and vesical cavities, but others remain implanted in the tissues. In the whole length of the intestinal region the infiltration of the Bilharzia eggs may produce different effects; that which predominates, however, is the formation of certain tumors which have the appearance of polypi. It is in the rectum that the development of these tumors is particularly frequent, or rather it is in this region that they generally grow to a greater size. By their situation, at a distance greater or less from the anus, they give rise to various phenomena, of which the principal are, hæmorrhage, diarrhœa, tenesmus—in a word all the symptoms of dysentery. These tumors are often as big as a walnut or almond, but many Egyptian doctors have cited examples of rectal tumours consecutive to the Bilharzia, which have reached the size of an egg, or even of a small fist.

The following case occurred in the hospital of the Deaconesses of Alexandria, under the care of Dr. Mackie :

A child, *æt.* 12, for nearly two years suffered from hæmaturia and dysenteric symptoms. It was observed that a tumor appeared at the anus during efforts of defecation. Recently the hæmaturia had disappeared and the rectal tenesmus had considerably diminished, but defecation was more and more impeded by the increased growth of the tumor. The child was anæmic ; the urine clear and transparent, but a repeated examination showed that it contained a notable quantity of *Bilharzia* ova. Rectal examination revealed, at a distance of 5 to 6 centimetres, from the anus, a large tumor implanted by a broad base on the left side of the rectum. During the efforts of defecation a part of the tumor became visible through the orifice of the anus. This tumour was removed at the level of its base by aid of the *écraseur*.

Examination of the tumour.—The tumour of the approximate size of a small apple is flesh coloured and of soft consistence ; the surface regularly lobulated, with fibrous tracts limiting the principal lobules. Each lobule is formed of a finely granular substance. On a cross section the aspect is identical with that of the surface, except that there are exposed a few cystic cavities filled with a gelatinous, yellow, transparent substance. In one of the cysts is remarked a blackish material of hard consistence—evidently *foecal*. The gelatinous substance was cursorily examined under a low power for the distoma eggs ; but as the result was negative the tumour was cut up in small pieces to be hardened in alcohol. On one of the fresh fragments of the tumour a considerable number of the ova could be distinguished with the microscope, containing living embryos, and one of them presented the various movements often observed some minutes before the rupture of the egg.

Histological examination.—In the sections treated with picrocarmine, large tracts, strongly colored, can be observed with the naked eye, limiting alveolar spaces more or less circular, formed of a transparent tissue of reticulate structure and feebly colored with the picrocarmine. Under the microscope the opaque bands are seen to be composed of connective tissue more or less compact ; the alveolar

spaces being masses of tubular glands. Between each gland are thinner divisions of connective tissue. The inter-alveolar connective tissue is fibro-cellular, more or less compact; in certain spots the fibres are so close together that the cellular elements are scarcely visible. In other parts they predominate. Moreover, there are limited places where the tissue, composed almost entirely of cells, assumes the aspect of embryonic tissue. Most of the cells are rounded, but many are elongate and fusiform. Their protoplasm is uniform in appearance and more or less stained by the picrocarmine. In the sections treated with acetic acid the presence of a nucleus is manifested in some of the cells; others show only some granules strongly stained, probably the debris of a nucleus. In this same inter-alveolar tissue a considerable number of eggs and free embryos of the distoma are distinguished. They are found for the most part outside the vessels and are equally scattered in the fibrous and in the embryonic tissue. They are most often disposed in considerable groups—containing as many as twenty. Nearly all the eggs have the spine terminal, a few have it on the side. Some of them have the contents granular, others have the yolk more or less segmented, and others enclose the embryo already formed. Many of them, especially those in the compact tissue, have the contents obscure and blackish. The intra-alveolar connective tissue presents nearly the same characters as the above, but the fibrillar connective tissue with abundant proliferation of cells predominates. In this tissue the Bilharzia eggs are far from being as numerous as in the inter-alveolar, but a great number are to be seen, most often isolated, or rarely in groups of four or five.

In the sections, the glands which make up the alveoli are cut in various directions. Some are simple tubes, others difurcate or have several branches. Their length varies from $\frac{1}{2}$ to 1 millimeter; their diameter from 50 to 250 μ . Some have a distinct membrane. They are lined by cylindrical epithelium, the cells having no nuclei, but transparent and almost hyaline contents, and they vary in size. Some of the glands contain nothing, others an amorphous granular substance, and others are filled with hyaline spheres of cylindrical or polyhedral transparent cells.

Independently of the glands large empty spaces are to be seen, which evidently form part of the cysts which are recognized with the naked eye. They have not all the same origin. In a few a great number of the glands open, indicating that they result from accumulation of the glandular secretion; others have no communication with the glands and they enclose several fibrous tracts; they are probably formed by the destruction of a certain number of glands. Indeed, in some places can be distinguished masses of glands with a part of the walls and of the cells, destroyed so as to form a single cavity.

Diagnosis.—The above histological characters allow the tumour to be called a fibro-adenoma. The great augmentation in the number of the glands, and their deviation in type, show the growth to be a true adenoma, and not a simple hypertrophy of normal glandular tissue, and the large development of fibrous, compact connective tissue justifies the name of fibroma in addition.

Observations.—The cause which has determined the development is not doubtful, viz., the eggs of the Bilharzia, deposited in the mucous membrane of the rectum, having provoked an irritative process which has ended in the formation of an adenoma. These eggs have not acted solely as foreign bodies; most of them are placed living in the walls of the rectum, and many even have the embryo already formed. The movements of the embryo, and its exit from the egg, are also causes of the tissue irritation.

The Bilharzia eggs not only explain the genesis of the tumour, but they are the cause of its successive development and its continued growth. In fact the large vessels which end in the tumor are continually carrying the living eggs throughout its extent, and the numerous foci of irritation provoke a continual development of the elements of the growth. Where a part of the tumour is newly formed its vascular system has a parallel development which allows of the introduction of eggs into new tissue. This is, therefore, a case in which, in place of the hackneyed irritations usually invoked to explain the origin and growth of tumours, it is possible to substitute the more definite and less hypothetical action of a special parasite. It is possible to go further, and to find in the peculiarities of the life of the parasite, an explana-

tion of the nature of the tumour. It is generally admitted that for an adenoma to form the development of its histological elements should be so moderated that they have time to be disposed regularly and to reproduce the typical structure. The Bilharzia eggs produce a moderate irritation. The parasite is not fully developed in the human body—the ultimate transformations do not take place in the tissues. The embryo is only endowed with certain movements which soon cease, the irritation of the tissue being circumscribed and consequently moderate. If, on the contrary, the ova underwent a series of transformations ending in the perfect animal, it is probable that the more extended irritation of the tissues would hinder the regular disposition of the neoplastic histological elements. The abundant formation of epithelial cells would not give rise to new glands, but to irregular masses of cells imbedded in the connective tissue, we should then have all the elements of an epithelioma or true cancer. This is, of course, a pure hypothesis, but a likely one, which in similar cases to the above could be easily verified. Indeed, instead of a parasite like the Bilharzia there may be others which, from their size, escape a superficial examination. The particulars of the life of these micro-organisms may also, as in the case of the distomum, give the key to the origin, growth and nature of ordinary tumours, malignant and benign. Modern science tends to these ideas, and it is probable that they will be sooner or later verified.—*Progres Med.* July, 1885.

P. S. ABRAHAM (London).

III. Notes Toward the Formation of Clinical Groups of Tumors. By J. HUTCHINSON, F. R. S., (London). Advances the hypothesis that the time has arrived when it is both possible and desirable to make for practical purposes a more detailed classification of tumors than has yet been attempted, and that this must depend more upon locality, cause, contour and general course of the growth than upon mere microscopical appearances. The plan proposed is to take any example of rare disease and keep it by itself until others similar to it are found, and thus construct groups, which in turn may become large enough to allow of determining without much risk of error what are the differential peculiarities of the malady. As a general law for guid-

ance in clinical observations in this regard, repetitions of structural peculiarities may be expected whenever the morbid tendency displays its activity in precisely similar regions. Of this law the author submits several examples, such as rodent ulcer, which occurs with such preponderance in one special region that it gained the name of "peculiar ulcer of the eyelids." While the writer presents numerous instances in favor of his proposed method of classification, such as a characteristic fungous tumour of lympho-sarcomatous composition, occurring in the upper part of the neck, melanotic sarcoma of the sole of the foot, symmetrically fatty outgrowths, a hard and bossy tumor of the palate, which, though presenting a deep ulcer, is devoid of irritability and pain, warty tumors in cicatrices, etc., he notes more at length three groups:

1. *Melanotic Whitlows*.—This is one of the several peculiar forms which melanotic sarcoma presents under the law of modification by locality; the amount of pigment is very slight in the vicinity of the nails, and it is often difficult to recognize the pigmented structure in this region, but along the unswollen border of the tumor is to be seen a faint, melanotic line; the disease spreads more slowly here than does melanosis in most other positions and destroys the nail. The fungating growth which it finally produces, fails altogether to obtain pigment and is quite colorless. There is much greater hope of delaying the progress of the disease by operation than in most other forms of melanosis.

2. The *Crateriform Ulcer*, a new form of epithelial cancer of the face.—This is a malignant growth of epithelial type, met with, as far as the author's experience goes, only on the upper part of the face and more especially in the precise localities of the common rodent ulcer. The first stage is a bossy, rounded lump which rapidly attains considerable size and presents a somewhat conical summit. At this summit ulceration occurs, and a deep cavity forms with exceedingly little supuration or obviously destructive inflammation, forming a crater, the walls of which are of much thickness and of great firmness; the growth is much less vascular and less succulent than that of rodent, and, while it is easy to scrape the latter away, it is quite impossible to do so with

this. It usually begins in those past middle age, and without any obvious cause; is rapid in its progress, growing as large in a few months as rodent would in many years. As far as the author has observed, it shows no tendency to fungate or become warty, and in this respect, as well as in hardness of structure, density and thickness, differs from what is observed in common epithelial cancer of other parts.

3. *Recurring Fibroid of the Skin* (spindle-celled sarcoma).—Examples of the recurrent cutaneous fibroid are very rare, but they are very peculiar in the mode of development, the inveteracy and rapidity with which they recur on extirpation and in the absence throughout of any tendency to gland disease. In each of the cases observed, the early stage of the new growth was insidious and for some time very slow, but if left alone, there was ultimately a tendency to fungate and to the formation of blood cysts. The deep fascia became involved if the growth were neglected, but in the first instance the skin alone was implicated; in two out of three cases the growth was on the thigh, and in the third on the lower part of the abdomen. The author has never seen a recurring fibroid of the skin on the upper extremities, the head, nor, with one doubtful exception, on the upper part of the trunk. The tumors seemed to be softer in structure and grew more rapidly with each recurrence; their elements were repeatedly and by different microscopists assigned to the spindle-celled sarcomata.

If recurring fibroids of the skin are grouped by themselves, similar groups should be formed of the tumors of similar structure but more fibrous and developing in deeper parts, which are much harder and often found attached to the periosteum or to the deep fascia, and of the hard fibrous tumors, developed deeply, of very slow growth and tending to unsymmetrical multiplicity (ANNALS OF SURGERY, vol. i, p. 423). By these and by numerous other instances referred to less at length, the author shows that by careful case-collecting and the selection and grouping of cases clinically alike, clinical families, much more minutely subdivided than is possible to the microscopist as yet, may be constructed on a natural basis.—*Internat. Jour. Med. Sci.* 1886. Jan., April, July.

IV. Cancer of the Cartilage or Chondrosarcoma. By DESIR DE FORTUNET, M.D., (Lyon). This study of cartilaginous tumors is based upon a case of tumor originating in the tibio-fibular articular cartilage and in fourteen months attaining the size of the fist, the growth being attended with so great pain that amputation in the lower third of thigh was performed for its relief. The amputation was done according to the method of Molliere, complete hæmostasis being obtained by torsion of the vessels without the application of a single ligature. This case is submitted in opposition to the theory that chondromata arise only from abnormally placed cartilage, and to prove that normal cartilage tissue may give rise to tumors of a nature identical with itself. Further, it shows the possibility of malignant tumors of the cartilage, and the author proposes the name of chondrosarcoma for it in opposition to chondroma, used to designate benign growths.—*Revue de Chirurgie.* 1886. May.

V. On Fatty and Sarcomatous Tumors of the Knee-Joint. By R. F. WEIR, M.D., (New York). Details three unpublished cases together with a review of the literature of the subject. The first was of a young man in whose knee-joint, on the inner side of the patella, was felt a mass of considerable firmness like a loose cartilage and the size of an almond; it could be moved freely within the joint, but was evidently pedunculated as it could not be forced without it. Under antiseptic incision the supposed cartilage proved to be a portion of fatty tissue, harder than usual and attached by a rather broad thick pedicle, which stretched under the ligamentum patellæ and across the joint. As the mass could be pulled out with moderate traction, an attempt was made, in addition to the removal of the button-shaped end, to cut off as much of the lipomatous growth as possible after ligaturing it. This required an unusual amount of manipulation, and in spite of antiseptic precautions and immobilization, a suppurative synovitis set in, which necessitated amputation. The second case was of a young woman who had suffered for a year from pain, swelling and stiffness of the knee, in which was detected, internal to the patella, a lump the size of a large bean and movable for about an inch parallel to the axis of the limb; the joint was opened and, under carbolic

spray, the tumor exposed and lifted out, and its slender pedicle ligatured and divided, proving to be a giant-celled sarcoma; the patient made a good recovery. The third case was similar to the others in history, and under antiseptic incision an irregular shaped, softish growth, yellowish pink in color and marked by sundry ecchymotic patches, the result of recent exertion in dancing, was exposed, the growth being $1\frac{1}{2}$ inches long by 1 broad and nearly $\frac{3}{4}$ of an inch thick, and proving to be a fibro-sarcoma. This mass was held by a long, slender pedicle which was tied and subsequently divided. In spite of slipping of the ligature and consequent intra-articular hæmorrhage, which was checked by pressure, by which the blood in the joint was also evacuated, the patient passed on to a satisfactory recovery. A search into the literature of the subject gives but a single case of similar sarcomatous growth and but eight of lipomata.

The practical deduction to be drawn from the review of so few cases of a somewhat obscure affection is that too much effort should not be made, in the fatty growths, to effect their total extirpation, since the removal of the floating portion is all that is called for; and that, in cases where the suspicion of sarcoma is microscopically verified, the subsequent progress of the two cases reported leads to the belief that the same conclusion will be arrived at.—*N. Y. Med. Rec.* 1886. June 26.

JAMES E. PILCHER (U. S. Army).

VI. Melanotic Whitlow. By JONATHAN HUTCHINSON. Under this name the author alludes to cases of sarcoma, usual by melanotic, which spring from the bed of the nail. The black color is sometimes limited to a narrow border near the nail. He points out that when melanotic sarcoma fungates, and when it affects the glands, the larger growths are often white.—*Brit. Med. Jour.* 1886. P. 491.

VII. Traitement des Fibromes de la Paroi Abdominale. By TERILLON. The author cites two cases respectively of fibroma and fibrous sarcoma of the abdominal wall in the inguinal region, both in women. He lays stress on the fact that these tumors are often adherent to the peritoneum, and a removal of a portion of that mem-

brane may be necessary.' In one of the cases cited the adhesion of the tumour to the serous membrane was firm, but its division was avoided by removing the bulk of the tumour and then dissecting off the adherent portions. If any part of the tumour be left, recurrence is frequent, although the growth has the characters of a fibroma.—*Bull. Gen. de Therap.*

F. S. EVE (London).

VIII. The Immediate Closure and Rapid Cure of Fistula in Ano. By STEPHEN SMITH, M.D., (New York). Referring to the fact that this method of operation seems to have occurred to a number of surgeons independently and acknowledging his indebtedness to Emmet's operation for lacerated perineum, the writer describes his method as follows:

The bowel being cleaned out, the patient anæsthetized, the parts irrigated antiseptically, and a sponge, wrung out in a bichloride solution, introduced into the rectum above the fistula, the fistula and abscess cavity, if there be one, are opened freely, the pyogenic membrane thoroughly enucleated with the scalpel or scissors and all hæmorrhage arrested. The chief object of the operation is to secure perfect apposition of these freshened surfaces; to bring the whole wound into view, an assistant should introduce an index finger well into the rectum and, bending it as a hook, extrude the bowel. The first sutures should be so applied as to bring the deep surfaces together and evert the margins of the mucous membrane. To accomplish this, a carbolized silk ligature with a needle slightly curved at the point is used. One of the needles is now passed just above the highest point of the incision and from a fourth to half an inch from the margins of the wound, and the thread is passed through the center; the needles are then passed in opposite directions, at intervals of half an inch, in a continuous saddler's stitch so as to draw the two faces of the wound together and slightly evert the edges of the mucous membrane, but without any strain. The entire fistula track being now drawn outside by gentle traction on the ends of this suture, the edges of the wound are nicely adjusted by a continuous suture, commencing at the upper extremity of the wound. The operation is completed by passing two

or three large carbolized silk ligatures entirely under the fistula and tying them over an iodoform gauze pad, rolled firmly and laid along the wound, the object being to draw the deep portion of the fistula into suitable apposition. The parts are then dressed antiseptically and precautions taken to prevent movement of the bowels. In case of a large or irregular abscess cavity he suggests two modes of procedure, (1) by employing the saddlers' stitch, taken still farther from the margins of the wound, in order to bring the deep parts together; (2) by interrupted sutures passed as in lacerated perineum completely around the cavity—a method more difficult to employ but surer than the other. The cure is complete in a period varying from eight to fourteen days. The principles to be borne in mind in the operation are (1) complete removal of the lining membrane of the fistula and of the abscess cavity which may exist; (2) accurate and permanent adjustment of the opposing surfaces, and (3) thorough antiseptic treatment of the wound.—*N. Y. Med. Jour.* 1886. June 12.

JAMES E. PILCHER (U. S. Army).

BONES, JOINTS, ORTHOPÆDIC.

I. Congenital Symmetrical Exostoses. By Dr. REULOS. Observations of multiple symmetrical exostoses are far from being rare. If authors are in accord as to the mode of their development, they are not so with regard to their etiology. Amongst the cases published some have been attributed to rickets, some to a special and chronic inflammatory process, others to a super-abundance of the germative material which should later contribute to the formation of osseous tissue, or to some trouble of nutrition of unknown cause. All these hypotheses are supported by a certain number of facts. In many of the observations "heredity" plays a somewhat important part, but until now no such good example has been met with as in the following case:

Mrs. X., died at 79 years, of good general health, had always had symmetrical exostoses in the neighborhood of the femoro-tibial articulations.

M. R., her brother, died at 83 years; had from birth exostoses on the lower limbs. He had four sons, who all bore femoro-tibial exosto-

ses. In one of them they were so developed that he walked with difficulty.

Mme. L., only daughter of Mme. X., now æt. 62, healthy, possesses since her birth two bulky exostoses on the inner tuberosities of the tibiæ. She has had eight children, of which four are living. They all have exostoses situated on the lower limbs at different heights and nearly all symmetrical.

The eldest of the sons, æt. 37, invalided on account of the multiple and large exostoses of the legs, has two daughters who present exostoses of the bones near the femoro-tibial articulation. The second son, æt. 34, has like his brother been excused from military service on account of his exostoses. He is healthy, walked at 13 months; shows no incurvation of the long bones; teeth regular and without erosions; his muscular system very well developed, and articulations normal. No trace of rheumatic, syphilitic or other diathesis. His lower limbs are alone the seat of the abnormalities.

L. F., son of the precedent, æt. 7, of good general health, brought up at the breast, walked at 11 months, teeth well placed and without erosions, no incurvation of the long bones or trace of rickets, never had rheumatism or epiphysary pains; exhibits exostoses on the femora, tibiæ and fibulæ, and also on the chondro-sternal articulations of the fifth and ninth ribs, and on the scapulæ.

The third son of Mme. L., æt. 24, has exostoses like his brothers.

The fourth child of Mme. L. is a daughter who married young and has had eleven children, of which the five living, carry, like her, congenital symmetrical exostoses in the neighborhood of the knee-joint.

The history of the family seems worthy of interest, because it establishes incontestibly the transmission of the exostoses by virtue of heredity, because it puts in relief the character of the congenital exostoses, and because it gives us a means of distinguishing this from the specific exostoses. This character is the symmetry which has not failed once in any of the members of the generation.—*Progres. Med.* August. 1885.

P. S. ABRAHAM (London).

II. Excision of the Knee-Joint. By A. M. PHELPS, M.D., (Chateaugay, N. Y.). Cases for this operation should be carefully selected; it should never be resorted to in children under 8 years of age, except in cases of destruction of the entire joint and not until other means have failed. It is better at this age to excise through exploratory openings, such portions of bone and tissue as are found diseased, using the gouge-scoop and chisel thoroughly, establishing perfect drainage, fixation and extension. Chronic diseases with deformity, either purulent or non-purulent, not yielding to ordinary methods of treatment, are suitable cases at any age. Extensive suppuration, burrowing of pus, with many sinuses distributed about the joint and extensive necrosis, making it difficult, uncertain or impossible to remove all diseased tissue, are cases suitable for amputation. Deformities from long standing arthritis, with but little bone disease, limited to the articulations are very favorable cases for excision. Ankylosis in bad position, compound luxation and subluxation from long standing joint disease should be excised. Many cases of joint disease among the poor, which might by long treatment be cured, if the patients could spare time from their work, should be excised, because they are then soon restored to health; while, if the operation were not performed, amputation would quite likely be demanded in after years, owing to frequent relapses. The end sought in all operations of excision of the knee-joint should be (1) to remove all the diseased tissue, including the capsule of the joint; (2) to make the incisions in such a manner as to furnish easy access to every part of the joint and supply perfect drainage; (3) to restore old tissues to their normal position without leaving cavities; (4) to get perfect drainage; (5) to insure absolute immobility of parts after the operation; and (6) in children, after resection of the flexor tendons, placing the limb straight and utilizing the patella, when practicable, to prevent relapses. The operations which best meet these indications are Volkmann's, Fenwick's and Neuber's.

While tenotomy of the hamstring tendons has been frequently performed to allow straightening of the limb before the operation, to obviate the sacrifice of a greater amount of bone, the author believes resection of all the flexor tendons, to prevent their subsequent action in

producing relapse in children, to have originated with himself, and considers that it adds greatly to the efficacy of the operation, while detracting nothing from its safety. The paper is accompanied by reports of nine cases, in four of which the flexor tendons were resected, and tables of 329 operations antiseptically performed.—*N. Y. Med. Rec.* 1886. July 21.

I. E. PILCHER (U. S. Army).

GYNÆCOLOGICAL.

I. Alexander's Operation. Dr. Doléris contributes a lengthy article on this subject to the *Nouvelles Archives d'Obstetrique et de Gynecologie* (Jan. to May inclusive). After reviewing at length the history of the operation, which he clearly shows was first suggested by Alquié in 1840, he cites Alexander's cases in full, and adds to these 100 others which he has collected in literature. To these should be added nine more operations by Dr. Polk of this city, three by Dr. J. B. Hunter (not reported) and two by Dr. F. B. Harrington, of Boston. Several others have been performed in this city, so that the number of actual operations is probably 175 at the lowest estimate. In spite of the evidence thus adduced, there is a singular feeling of uncertainty among gynecologists with regard to the ultimate value of the operation. Its technique requires no further exposition. As regards the *permanence* of the results we are still left very much in the dark.

II. Oophoraphy. Under this name Dr. Imlach described before the British Gynecological Society a novel operation for the permanent reposition of prolapsed ovaries, when their extirpation by laparotomy is undesirable. In multiparæ, according to this gentleman, the ovaries are kept in place by the infundibulo-pelvic ligaments; whenever the latter become much relaxed, the ovary sinks downwards and becomes congested by reason of the interruption of the circulation in the vessels supplying the organ. Dr. Imlach seeks to restore the prolapsed ovary to its normal position in the pelvis and to maintain it there by shortening the relaxed infundibulo-pelvic ligament and suturing it to the hilum. Fourteen successful cases were reported. In the discussion

which followed the paper Mr. Lawson Tait insisted that prolapsed ovaries were usually the seat of chronic inflammation, and therefore that the operation suggested by Dr. Imlach might relieve, but would never cure, the patient.

III. A New Operation for Repair of Complete Laceration of the Perineum. Dr. R. A. Jamieson reported to the same society the successful results obtained by the following method of operating, in cases of laceration of the perineum through the sphincter:

Separate the recto-vaginal septum into two layers for a distance of about half an inch [from the anus?], then divide the vaginal portion longitudinally in the median line dissecting up the mucous membrane, with a portion of the adjacent skin, forwards on either side to the level of the insertion of the *labia minora*. This is now separated in the form of a strip, but is simply lifted from its previous attachment to the depth of $1\frac{1}{3}$ inches, parallel to the long axis of the body, its free border being the median longitudinal incision and a curved line drawn about half an inch "below the junction of the partly altered vaginal mucous membrane with the skin of the thigh." Transfix the horizontal border of each flap with a piece of catgut, to the end of which is attached a piece of lead. A cutaneous flap 4 inches long, having the shape of an isosceles triangle, with its base corresponding to the line of junction of the skin and mucous membrane, is now made on each side. These, with the muco-cutaneous flaps, are dissected "upwards and outwards to a line parallel with their bases, but a quarter of an inch external to them, and a quarter of an inch deeper." The raw surfaces of the muco-cutaneous flaps are stitched together with fine catgut along the median line, to form the lower part of the new posterior vaginal wall. The new perineum is made by carrying a continuous catgut suture from side to side along the lines of denudation "a quarter of an inch internal to the inclination of the cutaneous flaps to the subjacent areolar tissue." The anterior edge of the rectal wall is next drawn down and fastened behind the new perineum, and the cutaneous flaps are "loosely replaced, leaving on each side $1\frac{1}{2}$ inches between their

apices and the apices of their former beds." In order to complete this complicated operation, its author directs that two sutures be carried on each side "deeply into the perineo-crural angle, so as to ensure the formation of a fold in this situation" while a line of sutures is carried along the edges of the flaps, and the borders of the gap which remains are drawn together.

In the course of the discussion which followed this rather blind description Dr. Fancourt Barnes referred to the operation performed by Mr. Tait, the essential feature of which was the splitting of the recto-vaginal septum. The advantages of Tait's method were rapidity, absence of subsequent pain, the fact that the new perineum was more solid, and that the bowels could be moved soon after the operation. The operation was equally applicable to any variety of perineal laceration.

Dr. Imlach described a method by which a flap was taken from each labium, that on the left side being turned outward, while the right hand flap had its base in the median line of the posterior vaginal wall. A strip from the recto-vaginal septum was then to be dissected outwards. The free edge of the right flap was drawn across to the left labium and attached to its raw surface by fine sutures; the left flap was united in a similar manner to the right labium. "Then," in the words of the speaker, "pass a single stitch through the anterior edges to prevent infiltration of vaginal secretions, and then through the recto-vaginal strip behind." Dr. Imlach claimed that a solid perineal body was formed in this way, and not a mere median cicatrix, as after most operations.

IV. Excision of the Diseased Portion of a Cancerous Uterus Preliminary to Total Extirpation. PEAN claims priority in the following modification of the ordinary operation of vaginal hysterectomy. The operator, being provided with two thermo-cautery knives at a white heat, proceeds to remove small fragments of the diseased tissue until nothing is left but the shell composing the healthy uterine wall. There is no serious hæmorrhage during this procedure.

The *cul-de-sac* is now opened and the uterus removed in the usual manner, except that the vessels in the broad ligaments are at once seized *en masse* with long hæmostatic forceps, ligatures being applied at leisure.—*Gaz. des Hôp.* 1886. Jan. 21.

V. Conservative Ovariectomy. Professor SCHROEDER has recently devised an ingenious operation, which consists of excising the diseased portion of an ovary and leaving the healthy tissue, with a view to the preservation of the function of the organ. After carefully dissecting out the larger cysts, Prof. Schroeder unites the raw surfaces with fine sutures and then restores the ovary to the abdominal cavity. According to the experience of this celebrated surgeon, and of those who have practiced this operation, the results have been most gratifying. While menstruation continued, the former dysmenorrhœa was relieved in several instances. In one case the patient became pregnant after excision of portions of both ovaries.

VI. The Use of Cocaine in Gynecology. Dr. GEORGE W. JOHNSTON (Washington). After discussing the value of the drug as a local anæsthetic in cases of vaginismus the writer dwells upon its use in operative work, acknowledging that its range is restricted. Cocaine does not produce that profound and permanent anæsthesia which it is necessary to maintain during operations upon such sensitive parts as those in the female genital tract. The operator must repeatedly resort to fresh injections of the drug, while practically it is found to be difficult to keep the patient in a constrained posture, even when she is free from actual pain.

The author recommends the stronger solution (20%) used in Germany. The part to be anæsthetized should be thoroughly washed with an antiseptic solution, and then carefully dried before the applications of cocaine are made. After thoroughly pencilling the part with the solution above mentioned a piece of absorbent cotton soaked in the fluid should be allowed to remain in contact with it. The anæsthetic effect is obtained in from four to six minutes. Deep injections may be

practiced in certain localities; by beginning the denudation at the most dependent point in plastic operations on the vagina, each area may be cocaineized as it is reached. The author summarizes with the opinion that "by surface-pencilling with strong solutions in nearly all the simpler and more frequent plastic operations about the vagina and cervix a sufficiently deep and prolonged anaesthesia may be produced."

Following the body of the paper are a number of reported cases, several of which occurred in the author's practice, in which coloprraphy, trachelorrhaphy, operations on the urethra, etc., were successfully performed without pain to the patient. The paper deserves no little commendation, as it presents in a concise form a collection of valuable surgical memoranda which were widely scattered throughout the literature.—*Medical Record*. 1886. July 17.

VII. The Treatment of Retroflexion of the Uterus by a Recent Operative Method. VON ROBENAU. The author suggests the following novel operation for the relief of cases of retroflexion in which either a pessary cannot be retained, or, if worn, fails to keep the uterus in proper position. The anterior lip of the cervix is completely excised to the height of 4 centimetres. "The immediate result," in the words of a commentator in the *Centralblatt für Gynäkologie*, "is a perfect reposition of the uterus, which is explained by the fact that the larger anterior convex surface is so reduced in size by this high excision that it becomes smaller than the posterior concave."

• Through the resulting cicatrization the organ is drawn upward into its normal position. The author's observations and experiments were interrupted by his untimely death, so that the number of recorded operations only amounts to six. In four of these the result is stated as *nil*, in the other two doubtful. In reviewing the reports of the cases in which it is naively acknowledged that the extensive cicatricial contraction frequently led to stenosis of the cervical canal and resulting dysmenorrhœa, the reader will be led to wonder not so much at the heroism of the surgeon, as at his faith in the efficacy of an operation

which savors more of the dark ages than of modern scientific gynaecology.—*Berliner klin. Wochensch.* 1886. No. 18.

VIII. Hofmeier's Statistics of Operations for Cancer of the Uterus. Discussing the question of the radical cure of malignant disease of the cervix uteri before the Berlin Obstetrical and Gynecological Society, Hofmeier compares the result of operations after periods varying from one to five years. The reported cures after total extirpation amounted to 48%; at the end of the third year only 14% of the patients remained free from the disease. He concludes that in 45% of the suitable cases of supra-vaginal amputation no recurrence is observed, so that these patients may be fairly considered as cured. H. believes that if the above operation has been thoroughly performed the disease rarely returns within a year, and then nearly always in the per-uterine tissues. When, he says emphatically, a year after operation there is no evidence of a local recurrence, it may be safely affirmed that there will never be any. To this rule he has seen only four exceptions among forty-five cases.

XI. Castration in the Treatment of Cavernous Myo-Fibromata of the Uterus. Dr. GOLDENBERG lays particular stress upon the application of the so-called "Hegar's operation" to cases of uterine fibroids in which the tumor is recognized as a soft interstitial growth, with a rich vascular supply. In this class of tumors the entire uterus is diseased, and hæmorrhage is a prominent and dangerous symptom, because of the excessive congestion which attends each menstrual period. The writer believes that production of the premature menopause as well as a marked decrease in the size of the tumor, are results more invariably obtained when the fibroid is of the soft or cavernous variety, than when it is hard and less intimately connected with the uterus. The size of the tumor as well as the age and general condition of the patient do not affect the value of the operation.—*Centbl. f. Gynak.*

X. Vaginal Hysterectomy for Cancer. Prof. SCHULTZE (Jena). Schultze gives the results of three abdominal and nine vaginal hysterectomies, and deduces from them certain practical lessons, viz.:

If the cervix alone can be amputated at a point 1 centimetre above the upper limit of the disease, as felt by the finger, then amputation is to be preferred to total extirpation. If, however, the posterior *cul de sac* is opened during the former operation, then the surgeon should not hesitate to remove the entire organ. [This is opposed to the teaching that opening of the peritoneal cavity during operations on the cervix is a comparatively innocuous proceeding].

Before undertaking the operation, after the patient is anæsthetized, a thorough examination should be made by the rectum, vagina and bimanually, in order to discover the extent to which the surrounding tissues have been invaded. It is impossible to decide positively on this point, since in some cases the distal portions of the broad ligaments may be affected, while the areas immediately adjacent to the uterus are not diseased.

S. believes that the diagnosis of cancer of the corpus uteri can be made more positively by introducing the finger through the dilated os than by examining microscopically fragments removed by the curette.
—*Deutsch. Med. Zeit.* 1886. No. 24.

XI. Retention of a Fœtus in One Horn of an Uterus Bicornis; Extirpation of the Pregnant Horn. Dr. WIENER. The patient was æt. 29 and had borne two children, the last, seven years before. Her menses ceased in December, 1883, and the foetal movements were felt for the last time in September, 1884. The woman's health began to decline, and a month later she was seized with severe pains in the left side of the abdomen, accompanied by uterine hæmorrhage which persisted for three weeks. When received into the hospital and examined under ether, it was found that the uterus was displaced to the left by a smooth, hard tumor, which filled the pelvis and the lower portion of the abdomen.

In the posterior fornix was a mass resembling a foetal head; the growth appeared to be attached to the uterus by a thick, short pedicle.

The probable diagnosis of extra-uterine pregnancy was made, and laparotomy was performed. The tumor was found to be the right horn of a double uterus, containing a mature foetus in a state of beginning maceration. The mass was ligated and removed in the same manner as an ovarian cyst. There was profound shock for five days, with rapid, feeble pulse, vomiting and moderate rise of temperature. The patient then rallied and was discharged, cured, at the end of four weeks.

An examination previous to her departure revealed the presence of a left horn 6 ctm. in length, with a vertical septum, which had formerly separated it from the right. Involution proceeded normally and three months later the uterus had returned to the normal size of the organ at that time.

Commenting upon this case the writer believes that its result, if left to its natural course, would have been disastrous since the foetus would have become decomposed, and rupture of the sac with escape of its contents into the peritoneal cavity would have been a not unlikely occurrence. Operative interference is clearly indicated, since the prognosis is favorable. The stump should be treated intraperitoneally in every instance, unless there are evidences of advanced decomposition of the foetus.—*Archiv. f. Gynak.* Bd. XXVI. Hft. 2.

XII. Italian Statistics of Vesico-Vaginal Fistula. Dr. MORISANI. The author reports fifty cases of fistula. One hundred and eleven operations were performed, forty-one patients being cured and seven relieved. There were two deaths from septicæmia. Sims' operation was the one performed in most instances, the silver suture being preferred.—*Annali di Ostet.*

XII. Gradual Amputation of an Inverted Uterus by Means of a Ligature. Dr. PONCET. The inverted uterus was drawn downward as far as possible with a volsella and a stout silk ligature was passed around the pedicle of the tumor, and the ends attached to a *serre-nœud*. The cord was tightened until the patient (who was not anæsthetized) complained of feeling a slight pain. The vagina was thoroughly disinfected before and after the operation, and

was packed with iodoform gauze. The ligature was tightened a little each day, the patient experiencing but a moderate amount of discomfort and having an insignificant rise of temperature. A large slough came away on the eleventh day, and on the twenty-third a vaginal examination revealed no trace of the uterus, but only a transverse linear cicatrix in the roof of the vagina.—*Arch. de Tocologie*. 1886. April.

H. C. COE (New York).

SYPHILIS.

I. Necrosis of Clavicle of Syphilitic Origin. Sub-Periosteal Resection. By M. GILLETTE (Paris). In this operation, which was performed on account of necrosis attributed to syphilis, all but the inner 3 cm. of the bone was removed. It is noteworthy for the reproduction of a bridge of new bone connecting the sternum and the scapula, and for the complete restoration of all movements.

The patient contracted syphilis at the age of 17, was treated for a few weeks, and suffered only from slight reminders until July, 1884, when he was 25 years old. Then without apparent cause a swelling formed over the middle of the R. clavicle, and in a short time several sinuses led down to dead bone. Keeping within the periosteum M. Gillette sawed through the bone at its inner healthy end, and extracted, without any material hæmorrhage, the remainder, which was found to contain three sequestra. The wound healed quickly. It may be doubtful whether the necrosis was really syphilitic, no special search was made as to tubercle. In the subsequent discussion a similar case in which an equally successful operation was performed was mentioned, whilst M. Trélat maintained that the right treatment was to remove the sequestra and not to excise the whole bone; he admitted, however, the complete success of the operation. M. Tillaux (*Anat. Topograph.* P. 479) describes the case of a Parisian writer who in spite of a pseudarthrosis in one clavicle suffered no inconvenience except when carrying heavy weights on that shoulder.—*Bull. de la Soc. de Chirurgie*. March. 1886.

II. Treatment of Chronic Gonorrhœa by Means of Grooved Bougies. By Dr. LEOPOLD CASPER (Berlin). The author asserts that he has, by the daily passage of large nickel-plated bougies (Nos. 18 to 23 Charrière), succeeded in curing about fifty inveterate cases of gleet. Each bougie has a series of six longitudinal grooves which are charged with an astringent salve. After various trials he found the best astringent to be nitrate of silver, which is mixed in the proportion of 1.5 grms. to 100 of cacao butter and two of balsam of copaiba. The cacao butter must be only just melted for fear of reducing the silver by over-heating. Each bougie is left in the urethra for from a few minutes to an hour, depending on the patient's tolerance.

Casper agrees with the generally held opinion that gleet usually arises from chronic inflammation in the bulbous portion, and that it implies a threatening stricture, hence he insists upon the use of large bougies. The rare cases of "gonorrhœa posterior" (implicating the membranous and prostatic portions) he heals by pushing the bougie further into the urethra. In order to diagnose the latter condition he makes the patient pass his urine into two vessels consecutively, if both contain flakes and films of white deposit he infers its existence. If only "gonorrhœa anterior" (situated in front of the triangular ligament) only the urine first passed will contain the deposit. Tenesmus is an uncertain sign in chronic gonorrhœa posterior.—*Lancet*. Feb. 6, 1886.

J. HUTCHINSON, JR. (London).

REVIEWS OF BOOKS.

A MANUAL OF SURGERY. In Treatises by Various Authors. In three volumes edited by FREDERICK TREVES, F.R.C.S., Surgeon to and Lecturer on Anatomy at the London Hospital. Vol. I., General Surgical Affections, The Blood-vessels, The Nerves, The Skin. Vol. II., The Thorax, The Organs of Digestion, The Genito-Urinary Organs. Vol. III., The Organs of Locomotion and of Special Sense, The Respiratory Passages, The Head, The Spine. Duodecimos, 1866 pages, 213 engravings. Per volume, cloth, \$2. Philadelphia, Lea Brothers & Co., 1886.

It would be not only a pleasing but a profitable task to carefully review in detail the three handsome and shapely volumes issued by Mr. Treves and his collaborators. Without more time and space than can be allotted in these pages such an attempt would be both inadequate and invidious. The justice of this remark will be apparent when one reflects that the work contains no less than fifty-nine articles by thirty-three different writers, and that each article is a model of conciseness and brevity. To select a few from these for especial commendation would be not only a distasteful but a difficult undertaking, in view of the high standard of merit to which each attains.

The hand of Mr. Treves is evident throughout the work, in the choice, arrangement and logical sequence of the subjects selected for presentation. It is still more evident, if we mistake not, in the traces of vigorous and relentless pruning which appear from time to time in turning its pages. It must not be inferred from the stress laid upon this characteristic of conciseness, that any given subject is slurred over or imperfectly represented. This would be an incorrect impression. Every topic so far as observed is treated with a fulness of essential detail, which is somewhat surprising in view of the necessary limitations of space. This end is attained by a strenuous effort to express ideas in the fewest possible words, by the exclusion of polemic writing, by a systematic classification of each subject, and by the use of small but clear and readable type. It is also apparent that with a few exceptions little room can be allotted to the thousand and one details of treatment. Such details belong to larger and more exhaustive special treat-

tises. The principles and main lines of surgical therapeutics, however, are amply noted and enforced. The illustrations are comparatively few in number, but well chosen.

Another characteristic of the work is the well-nigh universal acceptance of modern and progressive views of pathology and treatment. This is seen especially in those portions treating of surgical tuberculosis, diseases of lymphatics, diseases of bone, and the treatment of wounds. As regards the latter, antiseptic theories and practice seem to be fully accepted. It is curious to observe in this connection that some of the authors represented still cling to the use of carbolic oil, and the antiseptic spray, both of which have been discarded by many operators as futile, and therefore mischievous in giving a false sense of security. It would also seem that the complicated and cumbersome gauze dressings, recommended in one at least of the articles, could be replaced with advantage by the more easily prepared and adjusted pads of absorbent material. The article on anæsthesia contains a useful list of conditions in which ether should and should not be used. No mention is made of Esmarch's wire frame for giving chloroform, which, in the writer's experience, is safer and by far more convenient than the use of a folded napkin.

The arguments for the use of Clover's and similar apparatus for giving chloroform and ether do not seem to counterbalance the great defect of such appliances. This defect consists in the fact that during their employment the effects of poisoning by rebreathed air are super-added to the narcosis from the anæsthetic.

The binding is well done, loose backs being employed so that the volumes lie open easily and are convenient to handle. Some errors of proof-reading exist, but none that cannot be readily corrected by the context. Cross references are inserted with sufficient frequency and discrimination to bind the different articles into an organic whole.

The entire work is conceived and executed in a scientific spirit. It is conservative without bigotry, and contains the bone and marrow of modern surgery. Doubtless some imperfections may be discovered on close examination, but taking the manual in its entirety, it unquestionably fills a place in the surgeon's library which would otherwise be untenanted.

G. R. BUTLER.

THE SCIENCE AND PRACTICE OF SURGERY. By FREDERICK JAMES GANT, F.R.C.S. Third edition. London, Bailliere, Tindall & Cox, 1886.

The present year has been rich in the production of large text books

on surgery, and encyclopedias and dictionaries. The third edition of Mr. Gant's work is to some extent a joint production, for we find several well known names attached to the more special subjects. Still the work is mainly Mr. Gant's for more than 2,000 pages are by him while the other contributors occupy about 240 pages. That his work has been appreciated by the public is evidenced by this being the third edition, and in the present issue we find considerable additions both to the text and to the engravings.

There is, and has always been, a special feature in this work, that it is not like most modern works upon the subject, which are noticeable for their conciseness, and err rather upon the side of abruptness. In this work there is an opposite tendency, and the author appears to be talking to you with plenty of time at his and the hearer's disposal. There is sometimes a charm in this, but it no doubt makes it of less value to the student whose time is only too short. But the practitioner who has the time will find the information given in a pleasant and generally in a clearly expressed form. Authorities are fully given and it is refreshing to find the old masters so freely quoted.

But in considering a modern text book on surgery, or one which claims to hold such a position, it is necessary to have more than a readable book. Surgery has no doubt made considerable advances in modern times, and these advances must be carefully borne in mind. Moreover, the explanations of pathological and physiological processes are subject to considerable modification from time to time. And we look to see how these matters have been treated. Here we find that the author has not been unsuccessful, and especially with the advances in surgery proper. Clear accounts are given of recent operative improvements, and the illustrations are certainly good, while the references to other works will be valuable to the reader. Where the author can refer to cases under his own care they are mentioned, but do not occupy too much space—sometimes, indeed, not fully enough or clearly enough, perhaps.

An endeavor has been made to interest the reader in the pathological aspects of surgery, but we cannot help feeling that it is with inferences and opinions that the work is dealing rather than with facts, and in the general diseases we do not find that what is known of the pathology is clearly described or the more recent observations always taken notice of.

The chapter on Pyæmia is thus not up to date, and the relation of this disease to organisms is not described, nor of septicæmia to the ptomaines, and yet the space given to its consideration is more than

enough to make one expect a full account of what is known. The account of Tetanus in the same way is wordy. That of hydrophobia seems not well arranged, and no mention is made of Pasteur's observations, but this may be accounted for by their being chiefly published very recently—perhaps since the type of this work was set up. We do not think the author wise in approving of delay in the treatment of cases of bites by possibly rabid dogs, nor do we think that excision when he recommends would be likely to be efficacious. Much that we have looked at in this work is extremely good, but the fault is wordiness, and this will make it less useful than it might be. The woodcuts, numerous as they are, and often very good and original, are wanting in clearness to the reader because they have no description attached to them.

W. W. WAGSTAFFE.

A GUIDE TO THE EXAMINATION OF THE NOSE WITH REMARKS ON THE DIAGNOSIS OF DISEASES OF THE NASAL CAVITIES. By E. CRESSWELL BABER, M.B., London.

This little work is certainly a most excellent and concise guide for those who wish to make themselves conversant with the various methods employed for the exploration of the nasal cavities.

The description of the anatomy of the interior of the nose and nasopharynx is the most complete of any we have seen in the English language, and will be found of value not only to the beginner, but also to those who are experts in rhinoscopy.

The opening chapter deals with the anatomy and physiology of the nasal fossæ. Two excellent illustrations, after Zuckerkandl, of vertical transverse sections through the anterior and posterior thirds of the nasal cavities greatly assist the reader to grasp the details which are needful to all who wish to make the nose a special study.

Attention is drawn to the tuberculum septi, first described by Morgagni and which has been recently figured by Zuckerkandl. This elevation of the mucous membrane of the septum due to an accumulation of glandular elements, lies opposite to the anterior end of each middle turbinated bone, and may be said to roughly mark the limits of the superior or olfactory region of the nose from the inferior or respiratory. As the author justly says, it plays an important part in the examination of the nares from the front, and he has certainly done well in insisting on the importance of this structure, and he is so far as we are aware, the first English writer who has done so.

The physiology of the nose is dealt with in a few pages. A distinc-

tion is made between the taste of substances appreciated by the tongue and their smell when in the mouth perceived by the olfactory nerve.

The somewhat conflicting opinions held as to the effect of the nasal cavities on the voice are alluded to. That they have a very important effect on the volume of sound admits of no doubt, and anyone can easily demonstrate this for himself by suddenly compressing his nose while sounding a note when the diminution in volume becomes very evident.

The symptoms of nasal disease are treated of in chapter ii, and the general practitioner will get some useful hints from the concise descriptions given.

Much attention has been paid by rhinologists during the last few years to various reflex phenomena such as attacks of asthma, spasmodic cough, migraine, etc., which are, according to Hack and other continental observers, at times connected with the presence of nasal polypi or hypertrophy of the inferior turbinated body. Dr. Baber adds some interesting instances of such cases, from his personal experience, in an appendix. There is no doubt that such cases do occur, but we would add as a word of caution, that we fear too much has been made of them as regards frequency, and as a result many unnecessary operations have been performed.

A few pages are devoted to the physical examination of the nose, and there is a good sketch of the typical physiognomy presented by a child suffering from nasal obstruction.

Dr. Baber calls attention to the value of sunlight in examining the nose, and prefers it to any other in the elucidation of difficult cases. He is also in favor of Trouve's Electric Photophore as being less cumbersome and expensive than the oxyhydrogen light. Trouve's apparatus gives a light of about ten candle power, whilst the oxyhydrogen light is considerably over five hundred, and we cannot but think that in its present form it is far preferable to the photophore, although a little more costly, and it compensates the surgeon for the trouble of manufacturing oxygen, which, however, in large towns can be often obtained in the compressed form.

Beginners will find much assistance from some diagrams which show in a very clear manner the different parts of the nasal cavities brought into view by bending the head of the patient backwards or forwards, and the sketches showing what is usually seen on looking into the nose from the front are also of value.

Clear instructions are given how best to perform anterior and posterior Rhinoscopy.

We agree with the author in preferring the simplest of appliances in examining the posterior nares, and believe with him that palate hooks and other like instruments of torture are hardly ever necessary. There are wood-cuts representing the best forms of nasal instruments, as well as some, such as "Zaufal's Tubes," which are painful to use and of very little advantage.

A short chapter on palpation of the post-nasal space, and another on the diagnosis of the commoner diseases of the nose are both useful. Anyone who follows out the very elaborate outline for a nasal examination suggested by Dr. Baber will certainly not be likely to fall into errors of omission.

In conclusion we know of no book which in a small number of pages gives such admirably clear and concise instructions on all the essential points connected with the examination of the nose.

MANUEL DE TECHNIQUE DES AUTOPSIES. Par BOURNEVILLE and P. BRICON. 1885. Paris. Librairie du Progrès Medical. (Handbook of Post-Mortem Examinations).

This is a useful little book which deals with the subject of which it treats in a thoroughly practical manner. The first part discusses briefly the various conditions under which post-mortem work is legally conducted in France, and by way of comparison, in other countries. Under the heading of Edinburgh the authors state "that post-mortems are generally opposed by Catholics, but this opposition can be set aside by the priest at the instance of the physician." Again it would appear that post-mortems upon Jews are prohibited in Paris, owing to the bodies being claimed by the Jewish consistory, a condition of things which the authors state is perfectly unjustifiable. The second part of the book describes the practical details of post-mortem work, and concludes with an exceedingly useful chapter upon the means to be adopted for preserving pathological specimens for the museum. As in most French works upon technical subjects, so in this, a careful and exhaustive bibliographical index is added.

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LECTURE.**Convalescent Cases.**

A Clinical Lecture by Professor LEWIS A. SAYRE,
At Bellevue Hospital, February 14, 1877.



CASE 6.—MARY CASHEN. Here is a little girl I feel proud to show you. Look at that smiling face, compared to what it was when she came here several months ago. The operation was performed three months ago. You will recollect that this girl came here with chronic disease of the knee-joint, which she had had ever since she was seven months old. From the age of seven months on, she remained with her knee in a state of Chronic Inflammation. It was plastered, and issued, and fired, and iodined, and she took internal remedies all the time, until within a few weeks of the time when she came here, but she never had extension and counter-extension, to overcome reflex muscular contraction. The muscles contracted in such a way as to produce a complete luxation backward of the leg upon the thigh, so that the head of the tibia lay in the intercondylic notch.

You will recollect that the leg and foot were models of symmetry and beauty, never having been stepped upon, or never having worn a shoe. The disease had so thoroughly involved the joint, that an excision alone could not save the limb. If a resection had been performed, the leg would have been too short to walk upon, and on that account I decided to perform an amputation upon the knee-joint, leaving the patella to form the end of the stump.

Mr. A. A. Marks, the instrument maker, has been kind enough to present to this little girl an artificial leg, and I feel under great obligations to him. He makes, as I think, **ALTOGETHER THE BEST ARTIFICIAL LEG** I have ever seen, simply because of its durability and simplicity. The foot has no joint at the ankle, and this is where the great advantage comes in. The core of the foot is a small solid piece of wood in the shape of a foot, only much smaller. This core is covered with a thick layer of sponge rubber, so that from the instep to the toes, and back to the heel, the foot is simply rubber. The elasticity of the toes and heel compensates for the absence of the ankle-joint, and in walking there is none of the jarring, dot-and-go-one walk so characteristic of the jointed leg. With this rubber foot she can walk with the *Stealthy, Noiseless Tread of a Cat*. The spring and elasticity of the foot is a positive comfort to the patient.

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See notes above on solution Bismuth and Hydrastia.

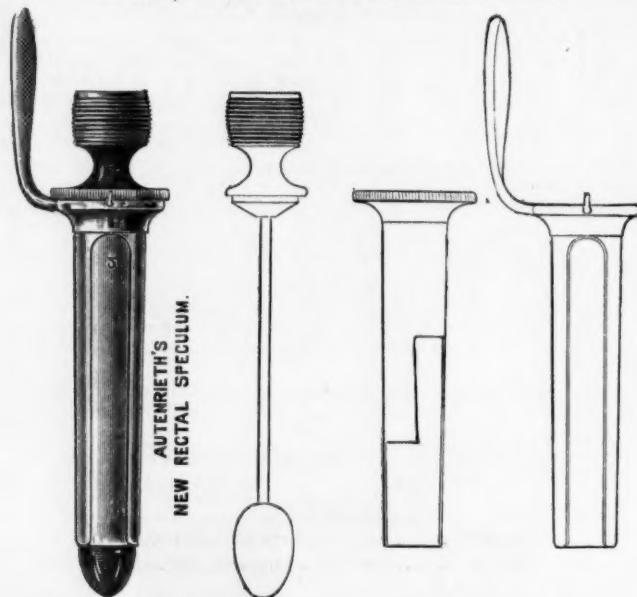
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THE SERVO-BULGARIAN WAR FROM A SURGICAL POINT OF VIEW.

By R. LAKE, L. R. C. P., M. R. C. S.

AT the commencement of hostilities early in November, 1885, the position of the forces at different times engaged was about as follows:

The main Servian army lay at Nisch and Pirot, and consisted of some 120,000 men. Opposing the Servians was a Bulgarian force at Zaribrod of about 20,000.

The main bulk of the Bulgarian army lay at Philipopolis, ready to meet the Turks, at least four days march from Sofia.

The Zaribrod force was gradually driven back to Slivnitza. This took one week, but the Servians were unable to proceed further on account of the break-down of the commissariat, thus allowing time for the main Bulgarian army to arrive. On its arrival in the second week of the month the battle of Slivnitza was fought, followed by the Servian retreat and the Bulgarian advance. The Dragoman Pass was forced, and the battle of Pirot fought. By the end of November the war was practically over.

BULGARIA.—At the outbreak of the war, what there was of an army medical department on this side, had made its arrangements for a campaign with Turkey. When war was suddenly declared with Servia their transport beasts were mostly required for more immediate uses, as the main force had to march about 360 kilometres to the seat of war. Consequently, even if the Army Medical Department had been capable of meeting the requirements of the forces, it was crippled, and when the strain came it collapsed. There were no trained orderlies to do the work; in fact, their Army Medical Department was in much the same condition as was the British when the Crimean war broke out, with the exception of the possession of most excellent ambulance wagons. These latter were able to carry two lying and two sitting.

Now it was not at the outset that the wounded were numerous enough to cause an utter break-down of all transport arrangements. During the first half of this short war of hard fighting the Bulgars were able, to a large extent, to remove those of their wounded who escaped capture, as they were continually falling back on their base in Sofia.

The transport of the wounded was accomplished by the few ambulances, but especially by the country carts, rough, long, narrow, open vehicles drawn by oxen, entirely without springs and with merely some brushwood or straw in them to lessen the jarring. However short the distance, therefore, the time between the "first aid dressing," which was rarely an antiseptic one, and that at the hospital, was necessarily very long.

Fortunately the weather was not very trying and the men were not worn out by long marches and privations.

At the middle of the campaign with the Servians at Slivnitza came a pause, all the capital was in a panic, but there were volunteers who helped to form hospitals—twenty-six in all—ambulances and a nursing staff. After the defeat of the Servians at Slivnitza there was good provision for the reception of wounded. Those already fit for transfer were sent home, or where there were either temporary or permanent hospitals. After the severe fighting following Slivnitza those beasts previously spared to the Army Medical Department were withdrawn, as the army simply pressed forward by forced marches fighting more or less all day. Each day added its complement of wounded to the rapidly increasing total, which formed at the time Pirot was reached at least 5,000. All that could be done was done, but skilled medical assistance was absent, or only represented by a few Bulgarian doctors who had probably never done an operation since they quitted the universities, and were only too ready to cloak their timidity and ignorance under the disguise of conservative surgery.

After the last fight at Pirot a new and serious complication arose in the camps, for typhoid and dysentery appeared. Before, however, many had succumbed to these diseases, the weather changed suddenly to bitter cold with a temperature as low as 27° Fahr, which seemed to check them.

The troops who were on the mountains were mostly without great coats and hundreds perished from cold. The wounded, with short rations, were still worse off, as they had only the open wagons to convey them back to the base. All up the Dragoman Pass the wounded were exposed to all the variations of the weather. Often at night they were not able to reach a shelter. Their limbs on splints were numbed for want of movement. They suffered terribly from the cold, and the number of frost-bites was enormous. It was no uncommon sight to see on removal of the dressings that the whole limb was gangrenous, such cases being, of course, most fatal. With the first frost came a heavy fall of snow, which necessitated all the wagons being put on runners. This rendered the inconvenience less, as the wagons traveled more easily.

The total distance from front to rear was about 90 kilometres, a journey of about twelve hours posting, but which occupied even as long as four days by these wagons which were thus obliged to spend from one to three nights on the road, and the accommodation at the rest stations was not one hundredth part enough. At the midway halting place, for instance at the top of the Dragoman Pass, not more than ten beds were to be got, and the demand for men at the front left no means of enlarging these buildings. At all of them there was a doctor, who did what he could for those requiring his assistance, although at one station I went over, the doctor in charge had only two instruments, a pair of tooth forceps and a scalpel.

Now at the end of November, however, relief was at hand. The German, Austrian, Hungarian, English and Roumanian Red Cross Societies sent out their ambulances all provided with surgeons, assistants, nurses and equipments.

The Austrian and Hungarian ambulances had most excellent wagons, and brought their own horses. They were thus able to set to work at once. They divided the work between them in such a way that the Austrian wagons, which were constructed for the conveyance of wounded on more or less level ground, took that portion commencing at the summit of the Dragoman Pass, the Hungarian wagons being of lighter build, and on very strong springs, doing that to which their ambulances were more suited, *i. e.*, the mountain roads and passes

from Pirot to Dragoman. Now there was no longer necessity for increased accommodation. The journey took from 24 to 36 hours under these more favorable circumstances, thereby greatly diminishing both the mortality and suffering.

Early in December the Red Cross surgeons were working hard, having completed their arrangements; most of the cases had been in hospital some weeks by this time, and much valuable time has been absorbed in rendering the various hospitals less septic.

When operating commenced it was found that the patients would as often as not refuse permission to the surgeon to amputate, whereon the surgeons went to the council for help. A law was passed to suit the case, which said that if three medical men agreed that it was necessary for a patient to undergo a capital operation, and refused his consent, that the operation might be done without or rather against his consent.

With regard to the temporary hospitals there is really but little to say, as they were all large, fairly well ventilated, public buildings, and with the exception of the water supply and drainage were as good as could be expected. The cold rendered an important service in preventing any decomposition in those things capable of putrefaction left about by the Bulgars, who have not much idea of cleanliness.

Overcrowding in hospitals, except at the front and at short intervals, was not common, and often then on account of the laziness of the chief of the hospital. In my hospital of 60 beds the assistance in the nursing line was fairly typical of what one would expect of untrained though kind women; they attempted what they were asked, but without intelligence or understanding the reason of what they did.

Pyemia and its allied diseases were, so far as I could learn, rare. This may have been from the fact that the more weakly and worse injured died en route. Still blue pus and foul smelling wounds were the rule when I started work.

There was scarcely a single primary operation of any magnitude done during the campaign, only a few minor primary being done at all.

SERVIA.

On account of the reverses they had suffered the Servians refused permission to the Red Cross surgeons to go beyond Belgrade, effectually preventing any knowledge of the real state of the wounded at the front and at Nisch. There is good reason to believe the state of affairs was worse even than in Bulgaria, during and after the battles of Slivnitza, Dragoman and Pirot.

Here, however, the Red Cross was earlier on the field, on account of the greater facilities of getting to Servia; an Austrian train belonging to and worked by the Knights of Malta under Baron Mundi came also at this time.

MAP OF THE SEAT OF WAR.



Showing Hospital Accommodations.

This train is constructed on the most improved and 'perfect' system of railway ambulances. Capable of being run on all continental lines, as the gauge is everywhere similar. It was complete in all its minutest details, and by aid of ordinary carriages they conveyed as many as 300 wounded, who were supplied with three cooked meals a day, that being about the time occupied by the journey from Nisch to Belgrade.

The train consisted of wagons to carry the wounded, each with its heating apparatus, and also kitchen wagons, a store wagon and a dispensary.

The medical men in charge of the train found a large number of wounded with a ligature round the wounded limb, no other means having been tried to stop the hæmorrhage, and this had often been on for days. It was often too late to save the limb when they came under his care. The hospitals and the hospital organizations were good; for many reasons better than at Sofia, for the town itself was larger and the war had never been so close. Therefore more time was available, and the public buildings and schools were often larger and more suitable than those at Sofia. There was also a very useful supplement to the nursing department in the form of a staff of dressers. It consisted of two parts, one of a certain number of medical students and the other of school boys. This was a very great improvement on the Bulgarian dressers. Amongst the Servian wounded it was most noticeable that a large percentage were wounded in a peculiar way. It is a well-known fact that when hand wounds occur behind entrenchments the left hand, and especially the index finger and thumb of that hand, suffer most frequently. These men were shot so that the bullet wounded the index finger on the right hand (the trigger finger) or passed between it and the next, or through the palm. This was the class of wounded most frequently attacked by tetanus. I had two cases; one was rapidly fatal, but the other recovered without any operative treatment. Prof. Mosetig treated his cases by amputation above the joint on the proximal side of the lesion and stretched all nerve trunks. He also treated three cases of traumatic aneurism most successfully, one subclavian and one brachial, by incision of the sac and evacuation of its contents, and then plugging the sac by iodoform tampons, which were allowed to separate of themselves, in no case was any ligature applied to the main trunk.

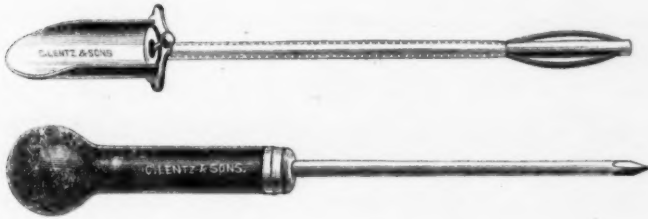
AN IMPROVED TROCAR FOR PARACENTESIS ABDOMINIS.

By JOHN S. MILLER, M.D.,

OF PHILADELPHIA.

ASSISTANT TO THE SURGICAL CLINIC, JEFFERSON MEDICAL COLLEGE HOSPITAL.

THE frequent occlusion of the canula by intestine or omentum in the operation of tapping has suggested the devise shown in the accompanying cut. The stoppage generally occurs when about a pint of fluid has been withdrawn, and various manœuvres are resorted to, such as the endeavor to float away the obstruction by changing the patient's position, or the dangerous one of introducing a probe through the canula—and generally without success.



The device to which reference has been made, is a smaller and longer canula introduced into that already in position in case there is a cessation of flow.

It is blunt and provided with two long fenestra. In the latter are springs which expand and push away the obstruction on emerging from the original canula, and which are so solidly soldered as to offer no danger of breaking off in the abdominal cavity. In reply to the query whether or not the gut can become incarcerated and wounded in the springs it may be stated that in several operations no such accident has occurred, nor were efforts successful to bring such about upon the recent cadaver. The instrument can be used with any trocar and canula above calibre sixteen—French. The instrument is manufactured by Chas. Lentz & Sons, 18 N. Eleventh St., Philadelphia.

EDITORIAL ARTICLES.

SURGICAL TREATMENT OF MALIGNANT TUMORS OF THE FAUCES.

Castex contributes to the *Revue de Chirurgie* a series of articles on this subject which amounts to an elaborate treatise of such value as to merit an extended review. Professional opinion has undergone a marked change regarding the surgery of this perilous region within a few years, and doubtless, as the experience of operators increases and the practicability of extirpation of the neoplasms of the fauces becomes generally accepted, many lives will be saved or, at least, considerably prolonged, which now are lost through the ignorance and timidity of surgeons. Blandin condemned the stupid rashness of any attempt at removal of the malignant tonsil, and a few years later invented a procedure for this very purpose. Many surgeons have essayed the operation, and Castex has, within two years, collected reports of thirty-five cases of the disease, eleven of which were under his own observation. His opportunities have been large, and his study of the literature of the subject thorough.

The beginning of these growths is generally insidious, and the physician is quite likely to prescribe chlorate of potassium; the patient is fortunate if he escapes cauterization with nitrate of silver.

Curiously the difficulty and pain in swallowing disappear in many cases and the patient forgets his trouble, until four or five months afterward, he notices a swollen gland at the angle of the jaw, and the case may have progressed beyond the point of justifiable operation.

All the parts of the fauces do not display an equal tendency to the development of malignant tumors. The tonsil is the point of least resistance in this respect. Of thirty-one cases in which the starting-point was observed, in twenty-one the tonsil was the part invaded first. Involvement of both tonsils is very rare. When the case is not seen

early, the tonsil is usually found to be more extensively destroyed than any other part. Next to the tonsil the anterior pillar is most susceptible to attack.

Necropsies are rarely made, and very few histological observations have been recorded. Castex has made a particular study of the normal anatomy of the parts. The tonsil is very nearly opposite the angle of the jaw. He regards it as an agglomerate gland, and calls attention to the fact that there are minature tonsils in the faucial depression, which satellites are probably the seat of the nodular growths around the principal tumor. Luschka discovered the pharyngeal tonsil in 1856; Gerlach has recently found a similar structure around the orifice of the Eustachian tube. There is also a series of isolated glands behind the circumvallate papillæ of the tongue, connecting the two principal tonsils, and meriting the name of the lingual tonsil. Between these various glands there is lymphoid tissue, but no distinct eminence of it, and on the inferior and middle turbinated bones and the posterior wall of the pharynx there are islets of the same, which are comparable to Peyer's patches. Thus is formed what Waldeyer has designated the lymphatic ring of the throat. The lymphatic vessels of the tonsils are numerous and large, and, according to Cruveilhier, empty into the glands at the angle of the jaw.

The malignant tumors of this region vary in character. Most authors consider encephaloid as the most common, obviously because they include under this head all tumors which have a cerebriform appearance, such as lymphadenomata and lymphosarcomata. Unfortunately microscopic examinations have been so infrequently made that it is impossible to state positively the relative frequency of the different varieties. In the observation of Castex, epitheliomata are by far the most frequent.

Heredity is believed to have little, if any, influence on the development of these growths. They have been seen in persons of various ages from 7 to 82 years. Epithelioma and carcinoma are more frequent in adults, sarcoma in the young. But a small proportion of the victims are females. The alleged influence of tobacco-smoking may well be doubted. The coincidence of buccal epithelioma and diabetes has been noticed.

These tumors manifest themselves by various symptoms. In the throat there may be abnormal sensations—distress in swallowing solids, especially in the second stage of deglutition; in some cases there is no pain, but a distressing dryness; in others there is excessive formation of saliva. Pain is not often excited by swallowing saliva, but is caused by pressure at the angle of the jaw. Frequently there is less pain after the surface of the tumor has been removed by ulceration. Meantime pulsating or lancinating pains occur in the head, neck and face, and especially in the ear. The aural pain, occurring in different diseases, often diverts the attention of the physician from the throat. The voice is altered, the degree of change depending on the size of the tonsil, the amount of salivary secretion, and the involvement of the veil. One of the saddest complications is the ptyalism, which at first is an inconvenience only after eating, but later is constant and may be prodigious, seriously impairing speech. Difficulty in swallowing is marked, and, unless care is exercised, liquids may be ejected from the nose. As some patients have no pain during deglutition though great trouble in the performance, Castex proposes the word *odynophagia* to designate painful swallowing, as distinguished from dysphagia or difficult swallowing. Hæmorrhages are infrequent, at least before the last stages, and are commonly insignificant. The breath is rarely fetid, except in the advanced condition of the disease.

Great care is necessary in the examination of the fauces and neighboring parts of the pharynx. (Would that we had an English word exactly corresponding with the French *arrière bouche*)! Natural light is the best. When the patient opens his mouth, he should be asked to show his teeth so that the lips may be fully separated. The left forefinger should then press back the right labial commissure in order to expose the throat to oblique illumination, thus permitting the examiner to place himself in front without intercepting the light. Frequent observations are desirable. Depression of the tongue is sometimes impossible, because its vertical portion has already become hardened, and sometimes because it is exquisitely tender.

The tonsil may be greatly enlarged. It is sometimes cracked, and then it is difficult to distinguish the disease from syphilis. It may be

lobulated or it may have disappeared by ulceration. If the tumor has invaded the surrounding parts, it is elevated as it hardens, and leaves the tonsil in a pit. The anterior pillar becomes thick, short, shriveled and hard. Then the tongue and the veil of the palate are invaded.

Having acquired a certain volume, the neoplasm begins to break down. It resembles a mush-room, its borders spreading out under the veil, the pedicle being concealed. It often becomes lobulated, owing probably to the movements of the tongue, and assumes a grayish hue. The ulceration looks like that in cancer of the tongue; there is rarely a granulated surface; the edges are red; the sore is covered with a gray, pulpy glaze, which gets onto the teeth and tongue. The disease is not entirely confined to the principal tumor. Around it at various points may appear spots of the same character, though separated by areas of seemingly healthy tissue, which, however, are soon involved and become part of the main cancerous mass, and others come into view outside the increased limits.

It is very important to examine every part with the pulp of the finger. Pain is produced by the digital touch, but all the region has lost its reflex sensibility, and occasionally is analgesic, as if it had been treated with cocaine. It is difficult to ascertain the degree of density of growths on the veil on account of its motion.

The most common seat of lymphatic involvement is at the angle of the jaw. The discovery of a hard gland at this spot should lead immediately to an examination of the fauces. These glands only exceptionally suppurate. Sometimes nodules are found in the submaxillary region; they are hard, movable and painful. At this time excision offers a chance of success. Gradually almost all the other lymphatics in the neighborhood are invaded.

The general health may not be affected for a long time, but some patients decline rapidly, because they deny themselves food in order to avoid odynophagia.

The progress is usually steady, but there are periods of arrest, especially between the appearance of the tumor at the angle of the jaw and the enlargement of the cervical glands. The veil is particularly liable to involvement, and the disease extends from it down the an-

terior pillar and involves the tongue. The posterior nares and the larynx are rarely affected. After a long time the hypertrophied glands may become sarcomatous. The dangerous period begins when the gland capsule breaks down; then removal is imperatively demanded. The duration of the disease is extremely variable. It may be five years or only a few months, according to the nature of the tumor and the constitution of the individual. The mode of death is equally uncertain. Hæmorrhage quite often ends the scene, coming from the branches of the external carotid. The internal carotid is not as near the tonsil as certain unfortunate accidents of tonsillotomy suggest; it is two centimetres from the outer surface of the gland.

In making a diagnosis, we should be suspicious of unilateral hypertrophies of the tonsil in mature patients, especially as atrophy is the rule at this time of life. Pain and soreness in the throat should never be disregarded. Infecting chancre, which Diday considers not rare on the tonsil and soft palate, may be recognized by its subacute progress, the pre-auricular adenitis, its singleness, its regular, oval or circular form, the evenness of its bottom and edges, its occurrence in young women, and its rapid cicatrization. The diagnosis is far less easy in some of the secondary manifestations of syphilis. Mucous patches especially are liable to be mistaken for epithelioma. In a general way, when the ulcer has a grayish bottom, is indolent, and is not accompanied by lymphatic enlargement syphilis is to be suspected. Tuberculosis of the pharynx is distinguished by absence of induration and of large lymphatic tumors. Tuberculous ulcers generally do not bleed, and the surface is granulated, as that of cancer is not. Scrofulides display irregular, granulating plates with cicatricial points, or an uneven, serpentine ulceration, or several small, jagged ulcers, eating beneath the surface; marks of scrofula will be present elsewhere. The microscope does not furnish means for perfect diagnosis between simple and malignant hypertrophies of the tonsil.

Epithelioma is characterized by early ulceration on an indurated base, and by the slowness of its extension and of its involvement of lymphatic glands. Lymphadenoma and lymphosarcoma are cerebri-form, of large volume, quickly adhere to the vessels, grayish, and but slightly tender. True carcinoma is very rare.

When the growth is circumscribed, the lymphatics are not involved, and the general condition is good, all surgeons are agreed that the tumor should be removed: but when the disease has invaded the walls of the pharynx and the neighboring glands, there is room for a question as to the propriety of an operation. Each case must be treated on its own merits, as in mammary cancer. If the tonsil and a part of the soft palate are involved, ablation is called for, especially if the growth has been slow. Operation is permissible even if the lymph-glands at the maxillary angle are implicated, provided they are movable. But when their mobility is lost, when the lymphatics in the carotid and subclavian triangles are affected, operation is contraindicated, because it only hastens the growth of the tumor. Cachexia and rapid growth absolutely prohibit the use of the knife. Even if the surgical procedure does not cure where it is permissible, it relieves the pitiful condition of the patient, saving him the pain in the ear, odynophagia, hæmorrhage, dyspnœa, and the swallowing of putrid discharges from the ulcer.

Many different methods of operating have been tried. Chloroformization is often difficult on account of the tendency to suffocation. Preliminary tracheotomy expedites the process and saves much trouble, closing the windpipe against the entrance of blood, especially when the instrument of Trendelenburg is used. Antecedent ligation of the carotid is considered indispensable by Polaillon, as it greatly lessens hæmorrhage, and sometimes diminishes pain.

In the removal of the tumor, there have been used the ecraseur, thermo-cautery, galvano-cautery, and cutting instruments, but the last two are best. When the growth is not very large, is movable, and the glands are not involved, the operation should be done through the mouth. The knife can be used. LeFort removed a cancer which involved the tonsil and part of the base of the tongue by passing curved needles under the tumor and applying the loop of a galvano-cautery beneath them. Ordinary means will control the bleeding. There is not much danger of wounding the internal carotid. When the operation can not be performed through the mouth, an artificial opening must be made. Jæger practised incision of the cheek on the affected

side in direct continuation of the line of the mouth. Polaillon ligated the external carotid, and then joined the upper end of this incision to the angle of the mouth by a horizontal cut, making a flap which he turned downward and forward towards the hyoid. With the chain saw he divided the lower maxillary at the right of the symphysis and across the angle of the ramus. This portion of bone being raised, he could reach the tumor. He passed a platinum wire through the tongue from a little above the great horn of the hyoid to the apex of the lingual V; a second loop was placed below the tonsil from the base of the tongue to the pharynx; and a third behind the tonsil cut the wall of the pharynx. The tumor was removed; the hæmorrhage was great; the cheek was sutured; no drain was used. One carbolized sponge was placed inside, and one outside, fastened together by a thread passing through the wound; the inner one was taken out the next day. The wound healed admirably, and the patient left in twenty days, able to swallow liquids and semi-solids perfectly. Polaillon has also practiced a semi-circular incision over the posterior and lower borders of the lower jaw-bone, to circumscribe the tonsillary fossa. A modification of this consists of two horizontal incisions united by a vertical which follows the parotid border of the jaw. Cheever extirpated the tonsil. He made a horizontal incision on the lower edge of the jaw, cut the bone in front of the masseter, drew out the tonsil with his finger, all without hurting a nerve or important vessel, then sutured the pieces of bone, and left an opening for discharge. In another case, he carried his incision from the end of this first along the anterior border of the sterno-mastoid. The incision along the base of the jaw allows one to pass under the parotid, between the submaxillary and the carotid vessels. Maunoury, in a case of epithelioma of the veil, anterior pillar and back part of the gum, made a vertical incision from the corner of mouth down to the lower edge of the jaw, and a horizontal cut to its angle. Israel, in a case of epithelioma of the third part of the pharynx, which was attached to the back of the pharynx, made a preliminary tracheotomy, and, three days afterwards, made an incision from the base of the jaw, two fingers' breadth in front of the angle, to the upper part of the trachea. The larynx was turned around on its axis, and

made to present its posterior face, which was then freed from the tumor. Death occurred in seven days from gangrenous retro-laryngeal abscess. Billroth performs pharyngotomy by a cut along the anterior border of the sterno-mastoid. Blandin and Dumarquay, when the tumor is too large to be removed through the mouth, open in at the same point, an assistant drawing back the important vessels. Duplay recommends Malgaigne's subhyoid pharyngotomy, in which an incision five centimeters long is made along the lower border of the hyoid, thus escaping the superior laryngeal vessels and nerves.

The following examples of large operations are given because they were brilliantly successful. In 1882 Labbé reported a case of epithelioma of tonsil, veil, neighboring pharynx, part of tongue and floor of mouth. He made a preliminary resection of the inferior maxillary, and totally ablated the growth with the thermo-cautery. Two objections may be raised to this mode of proceeding: (1) the absorption of septic products which form on the eschars, which, however, may be remedied by frequent antiseptic washing and leaving an aperture to the outside for a drainage tube; (2) the difficulty of alimentation, which Labbe overcame with the tube of Faucher. In 1884, Navaro, Turin, removed from a female, æt. 45, the lower part of the pharynx and upper part of the gullet. Five months afterwards she could take solid food, was in good condition, and the disease had not returned. One of the most extensive operations attended with good results was made in 1879 by Caselli, of Genes, on a girl æt. 19, who had epithelioma of pharynx, uvula, tonsils, base of tongue and part of larynx. There was no lymphatic enlargement, and the general condition was good. Preliminary tracheotomy was practised with the galvano-cautery and the tube of Trendelenburg was inserted. The incision extended from the symphysis to the sternum. The larynx and pharynx were detached at the level of the cricoid cartilage, the hyoid was cut in the middle, the base of the tongue was extirpated, the pharynx entered, all the soft palate detached, the pharynx amputated above, and the tonsils removed. An œsophageal tube was inserted, and three-quarters of the wound closed. Less than two ounces of blood was lost. The operation lasted over three hours. The points of chief difficulty

were the isolation of the larynx, so as not to injure the carotids and vagi, and the extirpation of the tonsils. Union was complete in one month, and in another the patient could swallow solids and liquids.

These operations are merely palliative, but in such tumors as sarcomata they prolong life and make it fairly comfortable. When the recurrence takes place, the patient suffers less than at first, because the parts invaded are less sensitive than the mucous parts at first attacked, and the tumor no longer presents retracted or bulging surfaces for the bolus of food to irritate. If the disease returns in the glands, the pain is less acute. Cachexia reduces the painful excitement of the nervous system. As Gosselin says, it is better to substitute a wound which the patient sees healing, than to allow him to observe constantly a growing disease. It is easier, also, to deceive the patient about the return of the disease, than about the character of the disease at first. If death by hæmorrhage threatens, the ligation of the common carotid, after Weiss, should be practised.

As regards medication, syphilitic treatment should be given in doubtful cases. Arsenic is employed by Verneuil and Bourdon, but is principally useful through its moral effect. Applications of cocaine are serviceable.

Castex sums up as follows :

Malignant tumors of the tonsillar region are most frequently epitheliomatous, and the tonsil is their usual point of departure. They generally attack adults rather than children. The chief functional symptoms are ear-pain, salivation, dysphagia and odynophagia. The objective characteristics are tendency of the ulceration to spread rather than to go deeply, grayish and pulpy deposit covering the ulcer; crushed forms or scattered spots sometimes covering the growth; anæsthesia to touch; angular glandular enlargement. The general symptoms appear late. The progress is not steady. Some epitheliomata bore through the base of the skull. Adenomata of the veil, at first encapsulated, may break out and become sarcomata. Early diagnosis is very important, and in elderly people unilateral tonsillar hypertrophy is suspicious. The principal disease with which it

liable to be confounded is syphilis, especially chancre of the tonsil.

The rules for surgical interference are (1) when the neoplasm is circumscribed, and the lymphatics are not involved, operate; (2) when the tumor, more extended, but still circumscribed and movable, is accompanied by secondary lymphatic disease, operation is justifiable, intervention being useful more generally than harmful; (3) when the involvement is greater, interference, though only palliative, is permissible, if certain conditions obtain, intolerable pain, intention of suicide, etc. The operation has a preliminary and a fundamental stage. It may be done through the natural or artificial passages. An opening for drainage should always be provided. Generally if the operation is early and thorough, the prolongation of life is satisfactory.

F. H. GERRISH.

EXCISION OF THE LARYNX.

Le Progres Medical of March 27 and April 10 of the present year, contains an exhaustive memoir by M. Baratoux, on the subject of "Excision of the Larynx." This may be considered as supplementing the contribution on this subject by Hahn (see *ANNALS OF SURGERY*, Vol. III., No. 1., P. 67, January, 1886) and should be studied in connection with it. Hahn published a list of ninety-one cases, together with eleven hitherto unpublished cases of his own. Baratoux has assembled 104 cases for the purpose of his study. The contributions of Gerster, Park and Lange, in the number of the *ANNALS OF SURGERY*, above referred to, should also be considered in this connection.

The substance of Baratoux's memoir is as follows:

History.—Until Levret, tumours of the larynx were left to nature. Desault was the first to propose the removal of laryngeal neoplasms; he described laryngotomy, but never practiced it. The first attempt of the kind was made by Bräuers, of Louvain, in 1833, and since that time the operation has been many times repeated. In 1829, Albers, of Bonn, in experimenting to establish at what point the larynx participated in respiration, removed a part, and even the whole of the larynx of dogs; but his two experiments were not encouraging, for one

of the animals died of hæmorrhage during the operation, and the other sank from inanition nine days afterwards. In 1854, Langenbeck having been consulted by a patient with malignant tumour of the larynx, discussed in one of his clinical lectures, the operative procedure of extirpation of the larynx, but the invalid refused the operation. Later Koeberle stated that he would not hesitate to excise the vocal organ in a case of cancer, "because," said he, "it would be more serviceable to have recourse to the operation, rather than not to intervene at all." Hueter also attributes to himself priority in the operation, which he intended to employ in the case of a woman with cancer of the arytenoid mucous membrane. He was going to do a preliminary tracheotomy, when the patient died. In 1866, Patrick Heron Watson, of Edinburgh, having to treat a patient with tertiary syphilis, and destruction of the laryngeal cavity, determined to excise the larynx. The patient died of pneumonia three weeks after the removal of his vocal organ.

Ignorant of this attempt, Czerny, of Heidelberg, wished to assure himself that removal of the larynx did not imperil the life of animals. His first experiments were not fortunate, for one of his dogs died at the end of two days, two others after fifteen days, and the last at the end of the fourth week from asphyxia due to displacement of the canula. In a later experiment, Czerny performed a preliminary tracheotomy, and when the trachea had become adherent to the skin, he did the excision. Making use of canulæ of larger calibre, he had nothing more to fear from displacement of the tube, which had been the cause of his first failures. Czerny's method of operating is the following: The animal being anæsthetized, he incises the skin in the median line from the hyoid bone to the tracheal fistula; then with a blunt instrument he detaches the soft parts; he only uses the bistoury to divide the thyro-hyoid and sterno-thyroid muscles at their insertion to the thyroid. He then cuts the trachea below the cricoid, and introduces into it a smooth caoutchouc tube with thick walls, in order to hinder the entrance of blood, and also to allow of the continuance of the anæsthetic inhalation. By drawing up the larynx he separates it from the œsophagus in order to dissect its posterior surface as far as the point

of the arytenoids; cuts the large cornua of the hyoid bone, and divides the larynx parallel to the upper border of the thyroid. In his five operations, Czerny left the epiglottis in place with the aid of a suture. In his other experiments he removed it, and from the following day the dog could easily swallow food. This operator does not doubt that the excision may succeed in the case of man—provided the patient be nourished by means of an œsophageal tube for a few days. Later speech can be restored by employing an artificial larynx, permitting the air to pass through the mouth and nose. In putting this last idea in practice in dogs, Czerny proved that he could thus re-establish the function of the vocal organ. A short time afterwards, on the 31st of December, 1873, thanks to Billroth, of Vienna, excision of the larynx was admitted to surgical practice. The following table gives a résumé of the excisions which have been performed since the first operation.

Up to the present time there have been 102 excisions—73 for cancers or epitheliomas, 10 for sarcomas, 10 for stenosis, necrosis, polypos, and 9 for affections, the nature of which we do not know—probably, however, epitheliomatous or sarcomatous tumours. Of these nine the operative procedure and results are not given in 5 cases. There remain, therefore, 97 cases which we may analyze. The excision was total in 83, and partial in 14.

The total excisions were :

		CURES.	DEATHS.	RESULT UNKNOWN.
For epitheliomas or cancers,	69	21	47	1
sarcomas, - - -	9	2	7	0
contractions, necrosis, etc.,	4	1	3	0
diseases unknown, -	1	0	1	0
Total, - - -	83	24	58	1

In these statistics we include as cured 5 cancerous cases of which the results were reported less than two months after operation, and two of them were only operated on quite recently.

TABLE OF EXCISIONS OF THE LARYNX.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts Removed.	Result.	Remarks.
1	Watson, Edinburgh.	1886.	36.	M.	Syphilitic stenosis.	Larynx and opening of trachea.	Deaths in 3 weeks from pneumonia.	Pneumonia was already suspected before the operation.
2	Billroth, Vienna.	Dec. 31, 1873.	36.	M.	Carcinoma.	Larynx, inferior one-third of epiglottis and two rings of trachea.	Four months after recovery; death in 7 months.	Recurrence.
3	Heine, Prague.	1874.	35.	M.	Syph. strict.	Extirpation of part and one-half of thyroid.	Death eleven months after.	Progress of the disease.
4	Heine.	April 28, 1874.	50.	M.	Epithel.	Total extirpation.	Death six months after.	
5	Maas, Breslau.	June 1, 1874.	57.	M.	Aden. fibr. carcin.	Total extirpation.	Death, fourteenth day.	Recurrence.
6	Schmidt, Frankfurt.	August 12.	56.	M.	Epithel.	Total extirpation.	Death, fourth day.	Pneumonia.
7	Watson.	1874.	60.	M.	Epithel of left cord.	Total extirpation.	Death, two weeks after.	Collapse.
8	Billroth.	November 11	54.	M.	Carcinoma.	Total extirpation.	Death four days after.	Pneumonia.
9	Schönborn, Königsberg.	Jan. 22, 1875.	72.	M.	Carcinoma.	Total extirpation.	Death four days after.	Bronch. pneumonia.
10	Bottini, Turin.	Feb. 6, 1875.	24.	M.	Sarcoma.	Total extirpation.	Cured, 1881.	Bronch. pneumonia and gangrene of lung.

11	Langenbeck, Ber- lin.	July 21.	57.	M.	Carcinoma, larynx and os hyoid.	Larynx, hyoid, parts of pharynx, œsoph. and of tongue.	Death Nov. 23.	Recurrence.
12	Multanowski, St. Petersburg.	July 27.	59.	M.	Carcinoma.	Total extirpation.	Death three months after.	Pneumonia.
13	Multanowski, St. Petersburg.	August 9.	47.	M.	Carcinoma.	Total extirpation.	Death two months after.	Recurrence.
14	Maas.	Feb. 5, 1876.	50.	M.	Epithel.	Larynx, excluding epiglottis and loss of cricoid.	Death six months after.	Recurrence 3 months after operation. Death from hemorrhage.
15	Gerdes, Jewr.	March 30, '76.	76	M.	Carcinoma.	Total extirpation.	Death four days after.	Exhaustion.
16	Reyher, Dorpat.	May.	60	M.	Carcinoma.	Total extr. excluding epi- glott.	Death eleven days af- ter.	Pneumonia.
17	Watson.	1876.	60	F.	Epith. larynx and glands.	Larynx and glands.	Death one week after.	Pulm. embolism.
18	Koinski, Varsovie.	March 15, 1877.	36	F.	Epithel.	Total extirp.	Death nine months af- ter.	Recurrence.
19	Bottini.	Aug. 29.	48	M.	Epithel.	Total extirp.	Death three days after.	Pneumonia.
20	Foulis, Glasgow.	Sept. 10.	28	M.	Sarcoma.	Lar. exc. great horns of thyroid and half of aryte- noids.	Death March 1, 1879.	Pulm. phthisis.
21	Weguer, Berlin.	Sept. 17.	52	F.	Carcinoma.	Larynx, exc. half of cri- coid.	Cured Apr. 12, 1878.	

TABLE. *Continued.*

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts Removed.	Result.	Remarks.
22	Foulis.	Jan. 20, 1878.	59	M.	Stenosis in a dia-betic.	Ant. part of cricoid.	Death two months af-ter.	Slough of leg.
23	Bruns, Tubingen.	Jan. 29.	54	M.	Epithel.	Extirpation.	Death nine months af-ter.	Recurrence.
24	Burney Yeo., and Lister.	March.			Papilloma.	Remov. of voc. cord.	Cured.	
25	Rubo, Madrid.	May.	41	M.	Perichondritis and necrosis of thy-roid.	Total extirpation.	Death five days after.	Marasmus.
26	Foulis.	May 30.	60.	M.	Stenosis.	Anterior part of cricoid.	Death two and one-half months after.	Exhaustion.
27	Billroth.	July 7.	50.	M.	Epith. of left cord.	Half the larynx.	Death two years after.	Recurrence (6 months).
28	Czerny.	August 24.	46.	M.	Sarcoma.	Total extirpation.	Death Nov. 30, 1879.	Recurrence.
29	Billroth.	Feb. 27, 1879.	43.	F.	Epith. of pharynx and larynx.	Total extirpation of larynx and half of pharynx and esophagus.	Death seventh week.	Passage of tube into medi-astinum.
30	Gussenbauer, Prague.	May 24.	24.	M.	Carcinoma.	Total extirpation.	Death two weeks after.	Pulmonary tuberculosis.
31	Macewen, Glas.	July 31.	56.	M.	Carcinoma of phar.	Extirpation of diseased	Death in three days.	Pneumonia.

gov.					ynx and larynx.	parts.	Exstirpation of diseased parts.	Cured (1884).	Length of operation three and one-fourth hours, galvano-cautery.
32	Car. Azio Cas- telli Reggio- Emilia.	Sept. 20.	19.	F.	Sarcoma of phar- ynx, larynx, pal- ate and base of tongue.	Exstirpation of parts.			
33	F. Lange, New York.	Oct. 12.	74.	M.	Sarcoma pharynx and larynx.	Total extirpation		Death seven months after.	Recurrence.
34	Multanowski.	Dec. 4.	60.	M.	Carcinoma.	Total extirpation.		Death in five days	Pneumonia.
35	Langenbeck.	1879.	78.	M.	Carcinoma.	Part of larynx.		Death in three days.	Collapse.
36	Carl Reyher, St. Petersburg.	1880.	48.	M.	Carcinoma.	Total extirpation.		Death in seven days.	Broncho-pneumonia.
37	Thiersch, Leipzig.	Feb. 26, 1880.	36.	M.	Carcinoma.	Larynx and two rings of trachea.		Cured eighteen months after.	
38	Arpad Gerster, New York.	March 5.	50.	M.	Sarcoma of phar- ynx, larynx and base of tongue.	Extirp. of diseased parts, part tonsil and one-half of larynx.		Death March 9, 1881.	Pleurisy.
39	C. Reyher.	March 9.	57.	M.	Carcinoma.	Half of larynx.		Cured fourteen months after.	
40	Bruns.	April 1, 1880.	20.	M.	Contract. typhoid fever.	Partial extirpation.		Cured six weeks after.	
41	Thiersch.	April 15.	52.	M.	Carcinoma.	Total extirpation.		Cured seventeen months after.	

TABLE. Continued.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts Removed.	Result.	Remarks.
42	Novaro, Turin.	August. 19.	63.	M.	Epithel.	Total extirpation.	Death.	Recurrence third month.
43	Czerny.	Oct. 11.	47.	M.	Epithel.	Total extirpation.	Death March 25, '81.	Recurrence.
44	Hahn, Berlin.	Oct. 23.	67.	M.	Carcinoma.	Larynx, and part of thyroid.	Cured April, 1884.	
45	Caselli.	Nov. 9.	27.	M.	Enchondroma of neck.	Tumor and part of thyroid.	Death in two days.	
46	Thiersch.	Nov. 10.	45.	F.	Carcinoma of pharynx and larynx.	Larynx and part of pharynx.	Death March 16, '81.	Recurrence.
47	Bircher, Aarau.	Dec. 3.	49.	F.	Carcinoma.	Extirpation of glands; recurrence six months after; extirpation of larynx.	Death sixteen days after.	Pneumonia.
48	Pick, London.	Jan. 16, '81.	39.	M.	Epithel.	Total extirpation.	Death in five days.	Pleurisy and pericarditis.
49	Thiersch.	Jan. 17.	57.	F.	Carcinoma of pharynx and larynx.	Larynx and pharynx.	Death in seven days.	Pneumonia.
50	Toro, Cadiz.	March 9.	9.	?	Epithel.	Total extirpation.	Death in four days.	Pulmonary emphysema.
51	Winiwarter, Liège.	April 19.	55.	F.	Carcinoma.	Total extirpation.	Cured eleven months after.	

52	Fouls.	April 30.	50.	M.	Epithel.	Total extirpation.	Cured August, '81.	
53	Czerny.	May 12.	47.	M.	Epithel.	Larynx and two rings of trachea.	Cured April, '82.	
54	C. Reyher.	May 14.	57.	M.	Carcinoma.	Total extirpation.	Death in five days.	Broncho-pneumonia.
55	Kocher, Berlin.	May 16.	59.	M.	Carcinoma.	Larynx and ext. part of cricoid.	Cured sixteen months after.	
56	Tilanus, Amsterdam.	May, '81.	51.	M.	Epithel.	Total extirpation.	Death in thirty-six hours.	Collapse.
57	Gussenbauer, Prague.	May 19.	48.	M.	Carcinoma.	Total extirpation.	Cured two years after.	
58	Völker, Brunswick.	May 28.	44.	F.	Epithel.	Total extirpation.	Death five months after.	Suffocation in withdrawing canula.
59	Albert, Vienna.	July 6.	45.	M.	Carcinoma.	Total extirpation.	Death in ten days.	Broncho-pneumonia.
60	Hahn.	August 13.	43.	M.	Carcinoma.	Total extirpation.	Death in twenty-five days.	
61	Margary.	Sept. 29.	36.	F.	Epithel.	Larynx, one ring of trachea, pharynx and œsoph.		Recurrence third month.
62	Gussenbauer.	Oct.	62.	M.	Carcinoma.	Total extirpation.	Cured fourteen months after.	

TABLE Continued.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts Removed.	Result.	Remarks.
63	Gussenbauer.	Oct.	63	M.	Carcinoma.	Total extirpation.	Cured six months after.	
64	C. Reyher.	Oct. 10.	73	M.	Carcinoma.	Larynx and three rings of trachea.	Death nine months after.	Recurrence.
65	C. Reyher.	Oct. 10.	65	M.	Carcinoma.	Total extirpation.	Death in seven days.	
66	Novaro.	1881.	63	M.	Carcinoma.	Total extirpation.	Death in eleven hours.	Hæmorrhage, recurrence.
67	Schede, Hamburg.	1881.	54	M.	Carcinoma.	Total extirpation.	Cured two months after.	
68	Kuster, Berlin.	1881.	?	?	Sarcoma of vocal cord.	Unil. extirpation.	Cured Apr., 1884.	
69	Novaro.	Jan. 9, 1882.	65	M.	Carcinoma.	Total extirpation.	Cured June 8.	
70	C. Keyher.	Apr. 7.	55	M.	Epithel.	Lar. and phar.	Death in fourteen days after.	Exhaustion.
71	Kocher.	May 13.	54	M.	Carcinoma.	Larynx.	Recurrence seven mos. after.	
72	Whitehead, Manchester.	May 27.	46	M.	Epithel of right cord	Larynx and two rings of trachea.	Cured Jan. 31, '83.	
73	Bergmann, Würzburg.	June 12.	54	M.	Adeno-sarcoma.	Total extirpation.	Death Feb., '83.	Recurrence.

74	Burow, Kornig- berg.	July 25.	45	M.	Carcinoma.	Total extirp.	Death Nov. 15, 1882.	Sudden suffocation.
75	Maydl, Vienna.	Aug. 31.	50	M.	Carcinoma.	Lar. exc. cricoid.	Cured two years after.	
76	Kocher.	Sept. 28.	43	M.	Carcinoma.	Total extirp.	?	
77	Ruggi.	1882.	10	M.	Polyp. of larynx.	Total extirp.	Cured.	
78	Schäde, Ham- burg.	1882.	?	M.	Polyp. of larynx.	Partial extirp.	Cured April, 1884.	
79	McLeod, Calcutta	Nov. 5, 1882.	35	M.	Tumour fungating front of neck and raucous voice.	Lar. and thyroid gland.	Death 5½ months af- ter.	Pulm. tuberculos.
80	Hahn.	1883.	54	M.	Carcinoma.	Partial extirp.	Cured April, 1884.	
81	Lucke.	July 28.	54	F.	Carcinoma.	Total extirp.	Cured.	
82	Hodgen.		?			Total extirp.	Death in 4 days.	
83	Leirink.	Aug. 8.	72	M.		Total extirp.	Death in 4 months after.	Pneumonia.
84	McLeod.	Sept. 19.	40		Epithel.	Total extirp.	Death in 5 days.	Hæmorrhage.
85	Novaro.	Oct. 2.	54	M.	Epithel.	Total extirp.	Death 1 month after.	Pneumonia.
86	Bergman.	1884.	?	M.	Carcinoma.	Total extirp.	Death in 4 days.	Pneumonia.

TABLE. Continued.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Remarks.
87	Kuster.		?					
88			?					
89			?					
90	Holmes.		63	M.	Carcinoma, lar. and phar.	Total extirpation.	Death in forty hours.	Shock.
91	Hahn.	1884.	50	M.		Partial extirpation.	Cured April, '84.	
92	Schmidt, Griefswald.	Feb. 15.	29	F.	Carcinoma.	Total extirpation.	Death in seven days.	Exhaustion.
93	Thos. Jones, Manchester.	April 26.	44	M.	Epithel.	Total extirpation.	Cured June 14	
94	Maydl.	1884.	45	M.	Carcinoma.	Total extirpation.	Death in four days.	Hæmorrhage.
95	Prætorius		?		Carcinoma.	Cartilage, cricoid and thyroid	Cured.	
96	Durante.		?		Carcinoma.			
97	Labbé, Paris.	March 12.	59	M.	Sarcoma.	Total extirpation.	Death three months after.	Pneumonia.

98	Störk.	1885.	?		Epithel.	Partial extirpation.	Cured, May.	
99	Bergman n.	1885.	46	M.	Carcinoma.	Total extirpation.	Cured six weeks after.	
100	Roswell Parl., Buffalo.	June 28.	64	M.	Carcinoma.	Total extirpation.	Cured Sept. 12, '85.	
101	Billroth.	Dec. 18.	?		Carcinoma one-half lar.	Partial extirpation.		
102	Labbé.	Feb. 19, 1886.	50	M.	Sarcoma.	Total extirpation.	Death ten days after.	Pneumonia.
103	Péan, Paris.	Feb. 27, 1886.	35	M.	Epithel.	Total extirpation, exc. epiglottis and some of post muc. membrane.	Cured April 4.	
104	Péan, Paris.	March 6, 1886.	65	M.	Epithel.	Lar., anterior wall of esophagus and base of epiglottis, exc. cricoid.	Death.	Pneumonia following entrance of milk in lungs from disturbance of feeding tube on first day.

The partial excisions were:

		CURES.	DEATHS.
For epitheliomas,	- - - 4	2	2
sarcomas,	- - - 1	1	0
contractions, necrosis, etc.,	- 6	2	4
unknown affections,	- - 3	3	0
Total,	- - - 14	8	6

Excision of the larynx has thus given us 32 cures and 64 deaths. Of 49 deaths following the operation for cancers, 2 succumbed on the second day (collapse, shock), 3, of which 1 was a partial excision, on the third day (collapse, pneumonia); 6 on the fourth day (collapse, pneumonia, hæmorrhage, asphyxia); 4 on the fifth day (pneumonia, pleurisy, hæmorrhage), 6 at the end of a week (pneumonia, embolism, exhaustion), 7 at the end of a fortnight (pneumonia, gangrene, phthisis, hæmorrhage), one on the twenty-fifth day (pneumonia), one at the end of a month (pneumonia), 3 in the second month (pneumonia, recurrence, slipping of the tube), one in the third month (pneumonia), 4 in the fourth month (pneumonia), 3 in the fifth, 2 in the sixth, in the seventh and in the ninth, one at the end of a year, and one lastly after two years. This one had been operated on partially for carcinoma, which returned about the sixth month. Of the 7 sarcomas operated on by total excision, one died on the seventeenth day, the second in the third month (pneumonia), the third in the seventh month (recurrence), the fourth in the eighth (pneumonia), the fifth at the end of a year (accidental pleurisy), the sixth in the fifteenth month (recurrence), and the last at the eighteenth month (pulmonary tuberculosis. Of the 7 deaths among cases of the contractions, necroses, etc., the 3 operated on by total extirpation succumbed—one on the fifth day, the second at the end of a month, and the last at the fifteenth month of marasmus, pneumonia and tuberculosis respectively. As regards the partial operations, one died on the third day, the second at the second month (diabetic slough), the third after two and one-half months (exhaustion), and the last in the eleventh month (progress of the disease). We only know of one death on the fourth day in a patient from whom the larynx was totally excised for an affection not stated (cancer or sarcoma).

The 32 cures are thus composed: Twenty-three for epitheliomas, of which 21 were total excisions and 2 partial, dating from 4 years, 2 years, 19, 18, 17, 16, 14 (2, of which one was a partial extirpation); 12 (one), 11, 8, 5, 4 and 2 months (2 cases); (in the 7 remaining epitheliomatous cases we only know the result for a few weeks); 3, for sarcomas, with two total and one partial excision—going back to six years, five years and three years (the partial); 3 for contractions, necroses, etc., of which one was total (polyp) and 2 partial (papilloma and stenosis consecutive to typhoid fever), and 3 for affections of which we do not know the nature (cancer or sarcoma). These were partial excisions—performed the one two years ago, the others only a few months.

In comparing the proportion of deaths and cures we see that for epithelioma—without regarding the five latest excisions, of which our information does not extend for more than two months, and one case, the end of which is unknown to us, there were 47 deaths and 15 cures, that is to say that cures only resulted in a quarter of the cases, if we may consider those operated on for two months to a year. A third of the patients operated on died in the first week from shock, exhaustion, pleurisy, pulmonary embolism, hæmorrhage (twice), collapse (3 times), pneumonia (11 times). In the first month there were 8 deaths—that is to say, that a fifth of the survivors succumbed—6 from pneumonia, and in the five following months the mortality was 12, from pneumonia, recurrence, etc., *i. e.*, more than a third of the remaining survivors.

The results in the sarcoma cases were more favorable, since in the seven fatal cases five patients lived from seven to eighteen months. Here cures resulted in nearly half of the cases. But of the six cases operated on for contractions, stenoses, etc., five lived for less than three months, one less than for six months, and the last less than a year.

Hence in the excisions of the larynx death has supervened before the sixth month in more than two-thirds of the cases—if we except, however, the sarcoma cases, in which only twice a similar rapidity of mortality has been noted.

In partial excision success has been obtained twice in three times,

whilst in total excision death has taken place in more than two-thirds of the cases, half of the patients not living beyond the fourth month.

Indications.—Total excision of the larynx appears to be indicated in the case of malignant neoplasms which, having invaded more than half of the organ, have spared the neighboring parts. Patients too advanced in age should not be operated upon. One of Hahn's patients, however, æt. 67, was cured without any accident, surviving three and one-half years after operation.

Excision is contra-indicated in all cases of benign growths, papillomas, perichondritis, or necrosis of the cartilages, and in cases where malignant tumours have invaded the neighboring tissues or organs at a distance. The operation should also be refused when the patient is the subject of a serious disease.

Partial excision is preferable to total, in so much the more that recurrence is not more frequent in the first than in the second. It must also be considered that with partial excision the patient can dispense with the canula. He can then speak with a bass pharyngeal voice, and in certain cases, even a new glottis is formed. On the one side is a vocal cord and on the other a cicatricial tissue replaces the cord, producing a laryngeal voice far superior to that of all the artificial larynges. Partial excision will be employed in all the cases of malignant growths which do not extend beyond half the larynx, in certain contractions due to a fibrous transformation of the tissues, and to hypertrophy or ossification of the cartilages, hindering the use of the ordinary methods of dilatation. But this operation should not be resorted to for the cure of simple contractions, papillomas, perichondritis and necrosis of the cartilages.

Operative Procedure. Preliminary Tracheotomy.—In the greater number of the cases, tracheotomy was preliminarily performed, either on account of dyspnoea, or specially in view of the excision of the larynx, as Czerny advised, or again in order to remove a laryngeal tumour without extirpating the organ itself. It has been maintained that tracheotomy performed about two weeks before the excision, permitted the patient to regain strength, that it habituates the mucous membrane of the air passages to the direct action of the air, and to

the tickling produced by the canula, that it had the advantage of fixing the trachea solidly to the integuments, and of preventing a too great sinking of the aerial tube, and a flow of blood and pus into the trachea during and after the operation. By means of it also anæsthesia can be maintained during the whole operation.

Anæsthesia.—Surgeons have generally anæsthetised the patients with chloroform, with the mixture of alcohol, ether and chloroform or by means of bichloride of methylene (Heine). A certain number have used, besides, subcutaneous injections of morphine. Bottini has proposed to employ ether spray on the skin, but he was incommoded by the resistance and movements of his patient, whom he had not put to sleep. If preliminary tracheotomy has not been already performed, it must be done as low down as possible, and then the plugging of the trachea must be effected.

Plugging.—After removing the canula and enlarging, if necessary, the tracheal opening, the canula-plug of Trendelenbourg is introduced. This is composed of a caoutchouc cylinder fixed below to an ordinary canula which carries a tube terminating above in the interior of the cylinder and below in a caoutchouc bag which allows inflation when the canula is in place. Trendelenbourg's plug, applied to the internal wall of the trachea, prevents the blood from penetrating into the air passages, while it leaves the respiration free through the tracheal canula. A clip, fixed on the india-rubber tube through which the plug is inflated, prevents the latter from contracting. It is well to have several of Trendelenbourg's canulæ at hand, in case one or other of them does not act conveniently.

This method of plugging has been recommended by Heine, Langenbeck, Bruns, Caselli, Schoenborn, etc. Billroth states that he has been rather hindered than well served by this plugging apparatus, and Bottini asserts that it has no advantage: "If the bag be distended as it must be, it may also distend the lumen of the trachea too much, and the patient can no longer bear the instrument. If, on the other hand, it be reduced in size enough to be tolerated, blood insinuates itself between the plug and the tracheal wall, thus augmenting the dangers one is trying to avoid." The complete distention of the cylinder should not be

effected until the narcosis is confirmed. In addition to the use of Trendelenbourg's canula, with the view to avoid the introduction of blood into the lungs, Caselli and Lange advise the head to be placed in a dependent position—as Rose recommended. Certain operators even, instead of plugging the trachea, content themselves with placing their patients in Rose's position. Hahn prefers to Trendelenbourg's apparatus a canula with the lower end surrounded by prepared sponge. Bottini places a piece of elastic tube in the canula, after performing preliminary tracheotomy, while Albert only introduces the india rubber tube after he has separated the trachea from the larynx—thus avoiding tracheotomy.

If Trendelenbourg's arrangement be employed, the tube of the chloroforming apparatus is passed through it. This consists of a metallic tube which is adapted on the one hand to the extremity of the tracheal canula, and on the other to a caoutchous tube, which is attached to a funnel-shaped metallic piece, closed by a piece of taffeta upon which the chloroform is poured. The metallic parts bent at a right angle can be completely rotated around the axis. By means of this tube chloroform can be given from a distance.

Operation.—In order to lay bare the larynx a single incision can be made along the median line of the neck, and at each extremity one or two perpendicular incisions, so as to have two lateral flaps. The median incision should commence about one centimetre above the hyoid bone and extend as far as the tracheal fistula, if possible, without arriving, however, at the superior border of the cicatrix. In making a second incision transversely across the upper end of the first, from the internal border of the right sterno-mastoid muscle to the same muscle of the other side, the T incision is obtained which Langenbeck has recommended. Bottini, moreover, makes an incision perpendicular to the lower end of the median one.

2d Stage. Before going further Schoenborn has advised the performance of laryngotomy, in order to view the interior of the larynx. This opinion is not shared by a great number of operators, who attempt to isolate the larynx by means of a forceps, a grooved sound and a galvano-cautery knife (Bottini). The muscular insertions are thus

detached and the lateral surfaces of the larynx denuded—avoiding with care the vessels and nerves. According to Bottini, compression of the pneumogastric might produce syncope.

3d Stage.—The extirpation may be effected from below upwards, following the example of Czerny, Billroth, Heine, Schoenborn, etc., or from above downwards, like Maas and Langenbeck. In the method from below upwards the larynx is drawn forwards by means of a hook, and the trachea is divided immediately below the cricoid, either with the bistoury or with the galvano-cautery (Caselli). If plugging has not been done, there must be placed immediately in the trachea, a canula prepared beforehand, or an India rubber tube, the calibre of which will completely obstruct the lumen of the air passage. The posterior wall of the larynx is then divided without wounding the œsophagus, the larynx is drawn forwards so as to isolate it from the anterior wall of the alimentary canal, as far as its superior border and then the thyro-hyoid membrane is incised. The larynx is thus removed without the epiglottis, which is excised afterwards if that be necessary.

In the method from above downwards, the thyro-hyoid and thyro-epiglottidean ligaments are first incised, then the larynx is drawn forwards, and after having cut the lateral attachments of the larynx and œsophagus, the vocal organ is divided below the cricoid cartilage, or, better, the latter is divided with the help of Liston's forceps, so as to leave at the superior opening of the trachea a ring which will prevent retraction. It is evident that to act in this way, the cricoid must be free from the neoplasm.

For the extirpation, Bottini recommends the introduction of a sound into the trachea, to serve as a guide for the incision of the latter. After making a T incision, and opening the thyroid, Hahn advises an examination of the interior of the larynx to determine whether a total or unilateral excision should be done. In the latter case, he detaches the thyroid, and slits the cricoid which he partly removes. In the case of total extirpation, after dividing the cricoid, he plugs the cavity with gauze, detaches the soft parts of the opposite side, and separates this cartilage from the trachea, then he removes the larynx commencing from its lower part.

The removal being accomplished, the posterior wall of the pharynx and the superior opening of the trachea are exposed to view. The vessels are tied, Tredelenbourg's apparatus is replaced by a tracheal canula, or by a canula in the form of "⊥" ending above in a thick caoutchouc tube closed at the upper end on account of the abundant mucous secretion. The stopper may be afterwards removed so as to allow the patient to breathe through the mouth, the tracheal opening of the canula being closed (Bruns). An œsophageal catheter is then placed in position, and the necessary sutures are employed to bring together the edges of the wound. A phenic acid or iodoform dressing is then applied. Carbolic gauze or gauze steeped in dilute alcohol, or in a solution of chloride of zinc has also been used. Hahn has advised uniting the œsophagus to the thyroid membrane, so as to establish a provisional occlusion, permitting the patient to swallow. The sutures are removed on the fourth or fifth day.

During the first few days the patient is exclusively fed through the œsophageal catheter, but in most cases he may commence to take himself soft food, at about the fifteenth day or even on the eighth day (Billroth). From about the twentieth day the patient may habitually do without the catheter. A few days later an attempt to apply an artificial larynx may be made.

After the operation secondary hæmorrhage is to be feared, and above all pneumonia. To guard against this, it is well to employ permanent plugging of the trachea, and to cover the tracheal canula with a drainage tube of calibre equal to that of the trachea. Moreover inhalations and solutions of carbolic, and soda benzoate etc., may be used: it is not necessary that these substances be inhaled directly, it is sufficient for the inspired air to be charged with the vapours. To prevent the pus from penetrating to the mediastinum, and to avert the risk of pneumonia, it has been recommended to keep the patient's head bent back for the first six or seven days, so that the tracheal opening might be the most elevated part of the wound.

Artificial Larynx. In order to remedy the loss of voice, an artificial larynx is employed. The larynx of Gussenbauer is composed of two bent canulæ of hardened caoutchouc. One of them is to be in-

troduced into the trachea to allow of respiration ; the other, adapted by its lower end to the former, conducts the current of air to the back of the buccal cavity. After introducing these two canulæ, they are fixed by a ribbon around the neck ; and to them is adapted a third canula of silver, destined for the phonation. It contains a metallic tongue which is vibrated by the expired current of air. The vibrations are transmitted to the air in the upper canula, and the resulting sound is articulated in the pharyngeal and cricoid cavities. On the thickness and length of the metallic tongue depends the depth of the voice. Bruns' larynx is formed of an elastic tube, flattened and angular at the upper part which supports two India-rubber membranes touching at their free borders. These membranes vibrate, like the tongue of the preceding apparatus, when the external orifice of the tracheal canula is closed by means of a valve. Heine and Schmidt have applied the artificial larynx immediately after the operation ; other surgeons have waited three to five weeks. Leisrink has employed Gussenbauer's larynx on the twenty-second day in a patient who could not bear it, although he spoke very well with the apparatus. A silver Bruns' larynx was then applied, but although it was better borne, the patient could not speak. Leisrink therefore used a Bruns' larynx with a Gussenbauer's phonetic canula.

P. S. ABRAHAM.

OSTEOCLASIS.¹

A recent work by Pousson, of France, furnishes the most complete and instructive account of osteoclasia yet published. The author, a distinguished young French surgeon, has received considerable aid from Robin and other compatriots to whom the present position of osteoclasia is mainly due.

He justly remarks that it is perhaps wrong to regard osteotomy and osteoclasia as rivals. To-day both equally merit confidence, and are alike precise and safe.

¹Osteoclasia, by Dr. Alfred Pousson. Illustrated. Paris. J. B. Baillière et fils 1886. Pp. 262.

The object of the first part of the monograph is to trace the history, the principles and the methods of osteoclasis.

The General History.—Four periods may be distinguished. The first or “period of hesitation.” It dealt exclusively with mal-united fractures. According to Fabrice de Hilden, quoted by Laugier, neither Hippocrates nor Galen refer either to these or to the means of remedying them. Celsus advised, but timidly, the rupture of the callus. For many centuries this advice was repeated by scarcely any other surgeons except Oribasius, Rhazès, Avicenna, Fabricius d’ Aquapendente, and Heister. They used those old machines with wonderful names, such as the “scammum” of Hippocrates and the “glosocomium” of Nymphodorus. Ambrose Paré was a type of many surgeons who shrank from osteoclasis from the fear of breaking the bone in the wrong place.

The 2d period (that of “*application raisonnée*”) commences in 1699 with the excellent case in which De La Motte (of Valognes) corrected a mal-united fracture of the femur. Purmann was the first to construct a special osteoclastic machine. It was a sort of wooden screw which pressed a pad against the projecting angle of a mal-united fracture. Bosch (of Wurtemberg) in 1782 invented and used several times an appliance like a book-binder’s press. Cesterlen used Bosch’s machine a good deal, and published, which Bosch did not. Cesterlen described a machine of his own, the “Dysmorphostéo-palinclaste!”

The 3d period (that of “generalisation of osteoclasis and study of its procedures”). In 1848 Rizzoli invented his “*machinetta ossifraga*.” It is worth while to mention incidentally the object of its author in contriving this machine. It was to shorten the sound leg of one of his patients and make it match a deformed limb on the other side! He called his book “A new Method of Curing Lameness (Boiterie).”

During this period osteoclasis for ankylosis of the hip became not unfrequent. Pousson mentions various French surgeons in this connection, and our readers will readily recall the names of Americans and Englishmen. But their collective efforts did far less for osteoclasis than did the labours of Deloré, of Lyons. This surgeon occupied himself chiefly with the manual “*brisement forcé*” for the cure of genu valgum,

Now appeared the osteoclast of M. Collin, a clever surgical instrument maker. It was brought forward by M. Terrillon. Though scientific it was not perfectly satisfactory.

4th period, that "de perfectionnement et d' application." Our author writes that MacEwen's osteotomy would have given the death blow to osteoclasia, if improvements in osteoclasts had not come to the rescue. Under the patronage of two eminent masters, M. le prof. Ollier and M. Daniel Mollière, M. Robin, a young Lyonnais surgeon, has invented "a veritably new method" of osteoclasia which, either by means of M. Robin's own instrument or of that of M. Collin modified according to new principles, has proved its merits in all kinds of suitable cases, including fractures, ankyloses, and deformities.

In the next chapter, dealing with fundamental principles, procedures and methods of osteoclasia in general, M. Pousson gives the following table:

Operation principles.		Procedures and methods.	
Vertical pressure.	Manual osteoclasia.	{ With the surgeon's hands alone, or helped by one or more assistants: Deloré's method. Weights Pulleys, exercising traction on the summit of the angle. Purmann's Machine. Bosch's " Cesterlen's " Blasius's " Maisonneuve's machine "Diaclaste." Rizzoli's osteoclaste. Bruns' " Maurique's " Esmarch's "	
	Instrumental osteoclasia.	{ With the hands grasping the limb and trying to break it either by straightening or bending. The manoeuvre by which one breaks a stick across the knee. Tillaux's method.	
Flexion.	Manual osteoclasia.	{ Apparatus employing the long arm of a lever. { Weights. Pulley's. Volkman's. Collin's first apparatus. Taylor's apparatus.	
	Instrumental osteoclasia.	{ Apparatus using only a very short armed lever. { Robin's apparatus. Collin's 2d apparatus.	
Traction (in the long axis of the limb).	Manual osteoclasia.	{ With the surgeon's own hands or with those of one or more assistants. Pulleys. Schneider-Mennel's machine.	
	Instrumental osteoclasia.	{ Jarvis's " Dieffenbach's " Hennequin's "	
Torsion.	Manual osteoclasia.	{ Larger's procedure.	

Manual traction and torsion are mainly, if not solely used as adjuncts of force applied in other directions.

As a type of the method of *manual vertical pressure*, is given Deloré's own account of his operation for genu valgum. The patient (anæsthetized) is placed on the edge of the bed. Beneath the external malleolus is put a cushion, which an assistant fixes firmly, in order to raise the knee above the plane of the bed. In this situation the angle of the genu valgum points directly upwards, and the surgeon presses upon it with his hands upon which he brings to bear the weight of his body, giving, at the same time, little shakes (*secousses*). Too much force must not be used. The pad beneath the outer malleolus must not be too thick, for obvious reasons. When the surgeon feels tired he gives way to an assistant, whose manoeuvres he directs. The operator should proceed slowly, progressively and without being discouraged. At the end of a time varying with the resistance of the subject, he will see redressement take place. This time may be five minutes or even one-half an hour. Children of 2 or 3 years old, still actively rachitic, demand very little force. But great force is required for persons of say 18 to 20 years of age. Crackings are frequently heard during the operation.

Osteoclasis for genu valgum can be performed also by breaking the bone across the surgeon's knee, like a stick, or across the edge of the table (Tillaux's plan). The thigh is fixed by an assistant, and the leg and ankle are used as a lever by the surgeon.

It is difficult to fix the pelvis when dealing with an ankylosed hip. Terrillon has invented an instrument for this purpose. It is a kind of large double vice.

All the old instruments were, according to Poûsson, difficult to manage and, moreover, did not allow the point of fracture to be exactly predetermined. Therefore Rizzoli, in 1845, invented his "*machinetta ossifraga*." This consisted of a steel bar provided at its centre with a screw carrying at its end a metallic arc which pressed against the limb at the point where the bone was to be fractured, and remained motionless whilst the screw turned in its socket, thrusting the arc away from the steel bar. At each end of the latter were two

leather rings in which the limb was fixed. The limb being secured in these rings it was enough to turn the screw in order to press, by means of the metallic arc, against the intermediate part of the limb thus held. This instrument worked with considerable precision. Maurigue, of Madrid, substituted two screws which acted on pads pretty close together and broke the bone at a place between the two.

C. B. KEETLEY.

[TO BE CONTINUED.]

INDEX OF SURGICAL PROGRESS.

GENERAL SURGERY.

I. On the Etiology of Tetanus in Man. By ROSENBACH (Göttingen). Former theories as to the nature of this trouble are simply referred to but not discussed. Amongst modern authorities the zymotic theory has many advocates. The earlier attempts at inoculating animals all miscarried, largely owing to the fact that dogs, the animals used, are proof against tetanus infection. Carle and Rattoue were the first to get positive results, and succeeded in passing it from animal to animal. Nicolaier's experiments with earth tetanus are known.

Early this year R. took material from a fatal case of tetanus from frozen feet, about one hour post mortem. This came from below the line of demarcation, where necrotic skin adjoined non necrotic bone. It was introduced at evening under the crural skin of a guinea pig. Tetanus developed by the next morning and the animal died during the day. Further inoculation was only successful when the material was taken directly from the spot inoculated. It was successful in four guinea pigs and eleven mice in succession. This inoculated tetanus was completely identical with Nicolaier's earth-tetanus. It began according to the spot inoculated; if in the lumbar region, *e. g.*, the tail stood erect after nine to twelve hours incubation, though inclined towards the point of inoculation, if in an extremity then this became stiff in all its motions and soon stretched out completely tetanized, the sole upwards and the toes spread; soon the same thing began in the other extremity and the contracture spread to the back muscles; the animal could only move along with its forepaws. By the end of eighteen hours the latter also get stiff, trismus and opisthotonus develop, and at every contact. even with the glass coop, tetanic convulsions set

in. After this the animal lies exhausted, with great difficulty in respiration. Later life is only indicated by the rapid superficial breathing and slight twitching, death usually resulting in twenty-four hours. If a mouse is inoculated on the fore extremity then this becomes immobile first and soon prone in rigid extension. Some hours later the ear of the same side lies down, the otherwise prominent eye is retracted, and the lids are half closed. Absolute lock-jaw. After eighteen hours the whole body is bent towards the affected side, the other paw is stiff, the hind paws still movable. Tetanic convulsions on being grasped. Death in twenty-four hours. In the young guinea pigs used by R. the disease runs a very uniform course. In rabbits, though the course is essentially the same, general tetanic convulsions are much more prominent. Incubation lasts from twenty-four to forty-eight hours, usually thirty-six. A local muscle-tonus spreads from the inoculated point.

In man tetanus varies greatly according to the location of the wound. Not so very rarely the tetanic cramps seize the wounded extremity, as in animals. Head tetanus is one form. Besides other microbes R. found a bristle-shaped bacillus, like that described by Nicolaier as the cause of earth-tetanus. This R. carried as impure cultures in solidified serum through four generations without loss of virulence. Flugge's co-workers have succeeded in obtaining pure culture of the earth-tetanus bacillus, though difficulty was found in transferring them to other like media. Whether they can only live with other microbes or the other microbes by absorbing O. favor the life of the tetanus-bacillus, the fact is interesting since wounds containing matters favorable to putrefaction specially dispose to tetanus.

How this bacillus produces tetanus is a question yet to be answered. Nicolaier found the bacillus once in the sciatic and twice in the cord. R. also found them twice in the cord, though scattered. He finally inclines to the view that some substance like strychnine must be produced to cause the peculiar symptoms.

In the discussion König conjoined the identity of Rosenbach's and Nicolaier's experimental tetanus, with that of man and the not infrequent form of horses after castration. In the latter case it frequently begins in the extremities or back. In man tetanus does not. by any

means, always begin with trismus, but at times appears first in the muscles at the point injured.

Socin (Basle) referred to his experimental results with garden earth as genuine tetanus.

After Ebermann (St. Petersburg) had suggested the possibility of ptomaines, Trabludowsky (Berlin) referred to a case in Gerhardt's clinic where the tetanic phenomena disappeared each time on pumping out the stomach (for pyloric stenosis).—Author's report of XV German Surgical Congress, in *Centrbl. f. Chirg.* 1886. No. 24.

II. Case of Inoculation-Tuberculosis After Amputation of the Forearm. By M. WAHL (Essen), In consequence of a bruise a one-year-old boy developed an inflammation and finally gangrene destroying the whole left hand. The forearm was taken off. In the preparation Gaffky found the coccobacteria septica of Billroth besides a variety of bacilli and cocci. Primary union, the boy being discharged with the small drain-opening still granulating. He passed into the exclusive care of a 13 year old girl with lupus of the nose. By her he was most probably infected with tuberculosis, since other sources of infection, especially impaired heredity, were not apparent.

The granulating spot on the stump began to enlarge and degenerated fungously. Soon the axillary glands became infiltrated, and the general condition much worse. The glands were extirpated, and showed macroscopically and microscopically exquisite tuberculosis. The boy is now quite well. He suggests that Koch himself was the first to observe tubercular inoculation. From a private communication it appears that K., in 1874, amputated a finger for tedious ulceration in an otherwise healthy person. Some years later the man died of tuberculosis. On examining the alcohol preparation of the finger in 1882 tubercular bacilli were found.

With regard to infection from milk W. suggests that the custom in some country districts of washing skin eruptions with fresh milk may explain some cases.

In the discussion König mentioned a case of large tubercular abscess of the rectus abdominis muscle, from which tubercular peritonitis

directly developed. In all probability it resulted from hypodermic injection with a syringe which a doctor, careless as regards cleanliness, had frequently used on a very tubercular individual. In the above case of peritonitis the remaining organs were free from tuberculosis.

Volkman told of a patient in whom, after the cure of a tubercular fistula of the rectum, a lupus exfoliatus developed at the point of the former wound.—Author's Rept. of Congress of Germ. Surgs., in *Centbl. f. Chirg.* 1886. No. 24.

W. BROWNING (Brooklyn).

III. Three Cases of Malignant Pustule. By Dr. GIUSEPPE MOGGI. The author describes three cases of malignant pustule which had come under his own observation, and draws attention to the mode of treatment which he adopted in each case. The first case was that of a healthy, fine young lad, æt. 16, who was working with a butcher. The disease appeared on the back of the neck, in the usual situation of carbuncles, and the symptoms presented were unequivocally those of malignant pustule. The treatment consisted of cauterizing the part with the galvanic cautery, injecting some carbolic acid solution, of the strength of 2%, at four different points, into the diseased parts, and douching the part with the same solution.—T. 40.5°, R. 26, P. 120. A small dose of sulphate of iron was given at intervals during the night. The next morning the patient was quieter, but the swelling had extended over the face and the neck, and had even reached the shoulder and the chest. T. 39.4°, R. 22, P. 110. The patient was afterwards removed to the hospital, where he died on the sixth day. The next case was that of a man of about 40 years of age, a vender of skins by occupation. Three days before he came under observation the patient noticed a boil on his left zygoma, which was accompanied with pain and much malaise. On examination the disease proved to be a malignant pustule. There was enlargement of the glands in the axilla, above the clavicle and beneath the lower jaw, on the left side. There were also general weakness, giddiness and pain in the joints. T. 40.2°, R. 24, P. 110. The local treatment was almost identical with that described—with the exception of the application of the cautery—above, and sulphate of quinine was given internally every half hour. The

next morning the swelling was found to have extended over the chest; the pain, however, was less. The hypodermic injections were repeated. T. 39.2°, P. 94, R. 20. Subsequently the galvanic cautery was used, owing to the vicinity of the disease to the eye. On the following day some improvement was noted; this was maintained, the enlargement of the glands subsided, and, after being under treatment for a month the patient was discharged, cured. The third case also terminated favorably. It was that of a man æt. 25, married, whose occupation was the same as that of the preceding patient. At first the symptoms were indefinite, being limited to a swelling of the left side of face, and general malaise. T. 41°, R. 29, P. 120. In a day or two the disease became fully pronounced, the cardinal symptoms of malignant pustule appearing over the left zygoma. The part was cauterized with the galvanic cautery, and the injections hypodermically of carbolic acid solution of the strength above referred to were employed. Improvement commenced in ten days' time, in fifteen days the slough separated, on the twentieth day the patient was quite convalescent. The author adds, in conclusion, that in a large number of cases of this disease which have been treated after the manner described above good results have been obtained.—*Lo Sperimentale*, March, 1886.

H. PERCY DUNN (London).

IV. A Case of Emotional Icterus, Accompanied by a General Eruption of Lichen. By Dr. NEGEL (Jassy, Roumania). A young man, æt. 23, who had a urethral discharge and a herpetic eruption on the mucous membrane of the prepuce, himself cauterized the latter with nitrate of silver. This led to an acute balanitis, going on to gangrenous ulceration. He was terribly alarmed, lest the whole organ should slough away. His urine became dark in color, the fæces pale, and a general and intense icterus was manifest. An eruption of lichen then supervened. Under treatment the balanitis and the biliary derangement disappeared in three weeks, but the eruption remained for some time longer. This observation appears to the author interesting from the point of view of the nature of icterus and lichen. The liver and other organs were healthy, there had been no gastric excess or history of cold—one can only put down the cause

to a strong moral emotion, induced by fear. At the same time the patient was of a herpetic nature, and the moral perturbation has acted only as an accidental agent in making appear the manifestation of a constitutional diathesis.—*Le Progres Med.*, 21 Aug., 1886.

P. S. ABRAHAM (London).

OPERATIVE SURGERY.

I. On Extirpation of Synovial Membrane Behind the Knee Joint. By Dr. D. G. ZESAS. This short communication is on avoiding the popliteal vessels in arthrectomy for tubercular joint affections. The removal of all the fungous material is of prime importance. When the synovial membrane back of the joint is also affected he recommends that the vessels be prepared out as far as the granulation masses extend; they can then be held aside until all the morbid tissue has been cleaned off. In very bad cases the vessels are to be approached from the popliteal space and then drawn back out of the way.—*Centbl. f. Chirg.* 1886. No. 28.

WM. BROWNING (Brooklyn.)

VASCULAR SYSTEM.

I. A Case of Ligature of Subclavian Artery and Vein Under the Clavicle. By Dr. M. A. VASILIEFF (of Warsaw, Russia). There are recorded sixty-five cases of ligature of subclavian artery under the clavicle, of which in twenty-two there was a favorable result, thirty-eight resulted in death, and in five cases the result is unknown. But there is not on record a single case of the simultaneous ligature of the subclavian artery and vein under the clavicle. Therefore, the case of Dr. Vasilieff deserves special attention.

Marianna Liatanska, æt. 20, servant, was admitted into the surgical clinic of Prof. J. A. Efremovsky on November 21, 1884, in which clinic Dr. V. is an assistant. The patient could not move her right shoulder, complaining of a severe pain in the axilla, where a hard, small tumor was felt. The tumor was rapidly increasing in size. On November 29 it was distinctly fluctuating and filling up the axillary and subclavian space. The patient was feverish. On December 1, under

chloroform, the tumor was opened in the axillary line. There was discharged a considerable quantity of pus. Dr. V. introduced his finger into the cavity, and passing it upward to the clavicle he found that there was a passage too narrow for a thick drainage tube; therefore he cut some tissues with a dull pointed knife. A profuse bleeding followed, which, after several vain attempts, was stopped by seizing the vessels *en masse* with hemostatic forceps. As the cavity was very deep, it was impossible to put a ligature on the bleeding vessels; therefore, Dr. V. left the forceps *in situ* in the cavity. On December 3 the dressing was changed. In the evening there appeared hæmorrhage of a venous character, and it was repeated in the night.

December 4. Temperature, $99\frac{1}{2}^{\circ}$; pulse, 104. Prof. Efremovsky enlarged the opening, trying to find the bleeding vessels. When the forceps were removed a very profuse hæmorrhage set in, which was stopped only by placing a ligature on the subclavian artery. But immediately after that a venous bleeding began which was also stopped by ligature being placed on the subclavian vein. The cavity was cleaned of clots, washed and dressed. The right arm was kept warm. The patient perspired freely; pulse in the left arm was 100.

December 5. The right arm was warm, but œdematous; sensation in the thumb and the index finger was lost. From December 6 to 20 the dressing was changed every day; the wound was very painful. There was no pulse in the right arm. The arm was œdematous all the time. On December 14 the ligature of the artery was removed during the dressing of the wound. On December 20 the ligature was removed from the vein. Since then the dressing was done every other day. The wound was filled with healthy granulations. Œdema was disappearing. But on toward the end of January inflammation set in at the shoulder and elbow joints, resulting in abscesses. On February 24, under chloroform, the tumors were opened, yielding a large amount of pus. The humerus was exposed, and in several places affected with caries. Acute osteomyelitis. Treatment with drainage. Suppuration was very profuse and Dr. V. feared that exarticulation was unavoidable. On March 1 erysipelas attacked the arm, affecting also the right side of the chest. In a fortnight the erysipelas disappeared, and the

wound, in all its extent, was covered with healthy granulations. Bone and other tissues healed in the beginning of April. The patient could not move her right arm and fingers. Massage and electricity. On June 16 the patient left the clinic in the following condition. The arm at the shoulder and elbow joint could be moved; the flexion of fingers was yet difficult; sensibility in the fingers was restored; pulse in the radial artery could not be felt. In the fall of 1885 Dr. V. visited his patient and found her arm still more improved, yet there was no radial pulse. She was in condition to attend to her duties.

Dr. V. believes that he cut one of the thoracic arteries together with an adjacent vein; he believes also that erysipelas had a rather beneficial influence on the patient, having checked the osteomyelitis.—*The Chirurgical Vestnik*, July, 1886.

P. J. POPOFF (Brooklyn).

LYMPHATIC SYSTEM.

I. Lymphangitis and Sublimate. Dr. W. SKINNER. The following two cases show the prompt efficacy of mercuric perchloride in lymphangitis following septic wounds:

(1). X., cook of a steamer, on the 28th of March cut the dorsal surface of the left index finger with a kitchen knife which divided the nail transversely. The wound was bathed with carbolized water and covered with diachyton plaster. On the 30th, inflammation of the lymphatics had set in, with painful glands at the elbow and in the axilla. The finger was red, swollen and the least touch caused great pain. The wound had a bad appearance and showed no tendency to close up. The treatment was changed, the wound well bathed with camphorated spirit, and compresses applied which had been steeped in a solution of sublimate, 2 parts in 1,000. They were left on for twenty-four hours. On the following day all the symptoms had diminished, the lymphatic glands scarcely painful, the finger much less swollen and red or tender. On the 7th of April the lymphangitis was cured, and the wound rapidly cicatrized.

(2). Mile. V. presented a well marked and extensive lymphangitis of the dorsal surface of the foot and lower half of the leg, with the in-

guinal glands enlarged and painful. She had previously scalded her foot and had pricked with a dirty pin one of the blisters caused by the burn. At the first examination the foot seemed to be the seat of phlegmonous inflammation which threatened suppuration, and it became a question whether the knife should not be used. The treatment, however, was limited to raising the limb, applying Neopolitain ointment and poultices to the foot. For three days this was continued, but no improvement ensued, and on the 30th the poultices were left off and the foot was dressed with compresses dipped in a 2 per 1,000 solution of sublimate. On the 2nd of May the amelioration was notable, the inguinal glands were nearly in a normal condition and all the pathological phenomena had diminished in intensity. On the following day the lymphangitis was quite cured and the wound commenced to heal.

The rapid success of this mode of treatment in these cases leads to believe *a priori* in the efficacy of sublimate in cases of erysipelas which notably resembles "reticular angioleucitis" in its septic and other objective characters. It will be indispensable, however, to watch carefully the absorption of the sublimate by the inflamed skin, which by its great pathological vascularity might introduce in the system toxic quantities of the agent.—*Le Progres Med.* Aug. 7, 1886.

P. S. ABRAHAM (London).

HEAD AND NECK.

I. Direct Fracture of the Vault of the Cranium Consecutive to a Fall on the Parietal in an Infant of Four Months. Integrity of the Scalp. Traumatic Meningitis. Death.
M. NOTTA. An infant fell out of a bed on the floor through a height of 75 centimetres. Five days afterwards he suddenly began to vomit, to cry violently and to be convulsed, especially in the right arm. At the autopsy, a yellow purulent layer was seen to extend over the left hemisphere of the brain, and with care a fracture of the left parietal without displacement of the fragments could be made out obliquely directed upwards and backwards to the sagittal suture.

The rarity of similar cases is due to the elasticity of the cranial bones

in infancy. The younger the child the more difficult the diagnosis of such lesions. Fracture of the vault, often giving rise at first to no serious symptoms, may after some days end in acute and rapidly fatal meningitis.—Soc. Anat. Oct., 1885. *Le Prog. Med.* 13. Feb., 1886.

II. Contribution to the Study of Gaseous Tumors of the Anterior part of the Neck. By Dr. PAUL FABRE (Commentry). Aerial tumours of the neck are sufficiently rare for the following two cases to be interesting :

CASE I. Unilateral aerial goitre.—Spontaneous emphysema on the right side of the neck arising during the course of bronchitis. A. T., born December 28, 1884, suckled by her mother, attacked by cough, of simple bronchitis March 13, 1885. On the 16th a swelling was noticed in the right supra- and sub-clavicular region; on palpation, the characteristic crepitation of traumatic emphysema; no trace of traumatism. The mother stated that the swelling began in the fold of the groin and mounted rapidly up to the neck. There was constant cough, each effort augmenting the tumour, which seemed to stretch also when the infant cried. Auscultation revealed loud and sibilant râles in the left lung. It was evident that the efforts of coughing had produced a rupture of the aerial canal followed by emphysema. No fracture of the ribs or of the laryngeal cartilages could be detected. The pulse beat over 116 per minute. Linseed poultices and Desessartz' syrup were ordered. The next day the cough was less, the supra-clavicular swelling a little less marked, and the emphysema had almost all disappeared below the clavicle. On the 18th the tumefaction was limited to the neck, and the cough was almost gone; the crepitation on the 19th scarcely existed. A teaspoonful of equal parts of the syrups of tolu and of ether was ordered every two hours. On the 21st all fever had disappeared, and pressure seemed to make the tumour vanish. Two days after there was neither fever nor cough, and the neck was not more bulging on the right side than on the left. From that time, more than a year ago, nothing of the kind has reappeared, and the little girl has been quite well.

Reflections. (1) From what he could establish, the author is in-

clined to think that in this case there was a rupture of the thyrohyoid membrane.

(2) In considering the succession of symptoms it seems difficult to assimilate this case to that of Mord-Lavaillée¹, in which there was a hernia of the lung, of which the orifice was limited by the border of the first rib—being, according to S. Duplay², only an exaggeration of the normal protrusion of the apex of the lung above the level of the superior opening of the thorax.

CASE II. Congenital absence of the first piece of the sternum.—Aerial diverticulum in front of the neck and in the upper median part of the thorax.

A male infant, one month old, presented in front of the neck a tumour which subsided quickly and completely at each inspiration. There was total absence of the manubrium of the sternum, and none of the rings of the trachea could be felt; there seemed, indeed, to be no solid tissues between the cricoid cartilage and the anterior extremity of the fourth rib. The bi-acromial distance was 15 c. m., the distance between the internal articular surfaces of the clavicles 4.5 c. m., and the length of the sternum 3.5 c. m. The size of the protuberance, distended at each expiration, was about that of a goose's egg. By touch the internal articular surfaces of the ends of the clavicles could be easily made out; the first ribs seemed to be joined together at their anterior extremities, and only at the level of the fifth rib could the sternum be felt. Curiously enough, a longitudinal fold or raphé extended from the xiphoid cartilage along the median line as far as the umbilicus. The child's cries caused the tumour to project, and at each inspiration to disappear and form an oblong cavity. The skin of the part was very thin. Six months later the condition was just the same. An apparatus was devised, not to prevent the projection of the aerial hernia, but simply to hinder any augmentation of volume which might lead to rupture.

Reflections. This case appears to the author unique, although many

¹Mém. d lea Soc. de Chirurgie. 1847. Vol. 1, p. 104.

²Traité de Pathol. Externe, vol. v.

deformities of the sternum are known—even cases of total absence of the bone. In October, 1852, Prof. Abbott, of Bahia, related to the Soc. de Biologie the case of a negress aged 30, whose rib cartilages came together in the manner of false ribs. At each inspiration they separated two inches from each other in the median line, approaching again at the expiration. If she laughed they separated so much that the heart could be laid hold of. She was quite strong and healthy. M. Servier, in his article on the sternum in "Dechambre's Dictionary of Medical Sciences," 1860, says that "in many clinics an individual may be seen whose heart, deprived of protection in front through absence of the sternum, beats immediately below the skin, which is raised at each pulsation. A plaster cast of the condition is preserved in the museum of the Val-de-Grace." In another case, that of a soldier dying of phthisis at the age of 21, reported by Dr. Ténières, the diaphragm was very much raised in consequence of the small length of the sternum, which, instead of being formed of three well-developed pieces, only presented an equal number of small, spongy nodules united by cartilages, the whole length being about five inches. The xiphoid appendix descended very low, and this contributed to the small height of the chest not being recognized. Wiedmann has cited a case in which the sternum was only represented by its upper part.

Passing over the far more common cases of asymmetry of the sternum, only those will be mentioned where the sternum was traversed by one or more openings from arrest of developments. Of the three pieces of the sternum, the xiphoid appendage is the seat of the greatest number of deformities, often of surgical importance, such as the pushing backwards of the xiphoid point, or its exaggerated projection in front, under the skin. Dr. Tino-Ramirez (Mexico) reported in the *Gazette Med.* 1868, p. 66, the case of a man æt. 75, who had never had any serious illness and had always been lightly employed. Along the middle of the sternum an irregular canal with convex borders divided the bone. It measured four centimetres in diameter at the upper end, then narrowed a little, and at the level of the third and fourth ribs, the little finger could not be inserted. From this point it again enlarged as far as the fifth and sixth ribs, where there was a kind of

sinus, which became lost in the epigastric region. During respiration the canal alternately contracted and expanded, and the movements of the heart were quite evident. The case also may be recalled which was observed by J. Hamersky, and made the subject of a memoir read by M. Behier in October, 1855, before the Soc. Méd. des Hôpitaux de Paris. There were no sterno-clavicular articulations, but the internal end of each clavicle rested on the upper part of the corresponding half of the sternum, which was in the form of a V, the halves uniting below in a cartilaginous piece which supported the xiphoid. Jahn has also reported a case of congenital fissure of the sternum in the *Archiv fur klin. Med.* vol. XV. p. 200. Finally, Sabatier has often observed a certain congenital mobility of the second piece of the sternum on the first, and he cites the case of a girl æt. 7 or 8 years, who presented this condition.

M. Servier, in his article in the *Dict. Encyc. des Sc. Med.*, gives no instance of total absence of the first bone of the sternum and of this only; and on this account especially the example given above merits attention. Moreover, in this case the heart beats in its proper place, and none of the large vessels can be felt in the open space at the upper part of the sternum. The principal point, however, is the presence of the aerial diverticulum which reaches to the superior part of the neck, projecting several centimetres, suddenly expanding at each expiration and disappearing equally suddenly at each inspiration.

In bringing forward the two cases together, the author is quite aware of the differences which they present. In the one case the tumour is acquired, temporary, and unilateral; in the other it is congenital, permanent and median in position. They have the common character that the tumours are situated in the neck and upper part of the thorax, that their contents are gaseous, and that they were observed in very young infants.—*Gaz. Med. de Paris.* Aug. 7, 1886. P. 373.

III. Two Cases of Excision of the Larynx. By Dr. PEAN, Surgeon of the St. Louis Hospital, Paris. Excision of the larynx is of recent date. Like so many other operations, the success of which is to-day assured, it is opposed by many surgeons, particularly by those

who have never had to employ it. Performed for the first time abroad, several years ago, it has been lately practiced in France by M. Labbé, who last year published a good case. This attempt encouraged the operation recently in the case of two patients who were affected with epithelioma of the larynx and who were nearly succumbing. One of them, *æt.* 35, is now full of health; the other, *æt.* 65, has seen the wound cicatrize, and the operation would have been equally successful if it had not been for a pneumonia complication, which would not have set in had we possessed more experience in this kind of operation.

Case I. Louis B., *æt.* 35, restaurant keeper, entered February 3, 1886, operated on February 13. No heredity—neither alcoholic nor syphilitic. Fifteen months ago, without known cause, he first became hoarse and dyspnœa followed. These phenomena gradually increased and since a year they have become urgent. At the present time there is aphonia, and attacks of pain. The expectoration is mixed with blood. By laryngoscopic examination Dr. Poyet established that the epiglottis was normal, that the right half of the larynx was dark red, that the arytenoid cartilages were swollen, and that the inferior vocal cord was covered with suspicious vegetations. The patient has much fallen off in flesh, although there are no cervical glands, nor any disorders of the principal viscera. On the 13th of February tracheotomy was performed, and on the 27th the ordinary canula was replaced by Trendelenburg's plug canula, to prevent the entrance of blood into the air passages, the patient was chloroformed through the tube, and a vertical incision was made with the bistoury in the middle line, extending from the middle of the sub-hyoid space to one centimetre from the tracheal wound. This incision exposed the cartilages of the larynx; the thyroid cartilage was then divided in the middle line, and by means of the scalpel the perichondrium was detached from its external surface. Seizing the right half of the thyroid with a flat blade forceps, the perichondrium was dissected off from its inner surface as far as the posterior edge. Thus freed on its two surfaces, it was easily removed by a movement of torsion. The other half of the cartilage was treated in the same way. During this manœuvre the anterior membrane of the larynx was found to be divided, and it was discovered to be in-

vaded above and at the level of the vocal cords in nearly its whole extent, especially on the right side. It was established also that the malignant ulceration occupied the part of the mucous membrane which covers the internal surface of the thyroid cartilage and the laryngeal surface of the two arytenoid cartilages. To facilitate the removal of these infective tissues, the cricoid cartilage was cut in front in the middle line and removed, its perichondrium being detached from both surfaces. The whole cavity of the larynx was presented to view, and all the mucous and subjacent tissues which degenerated were widely removed—including the arytenoid cartilages which were also invaded by the neoplasm. The epiglottis, being healthy, was retained. Five hæmostatic forceps controlled hæmorrhage during the operation. Then nine separate silk sutures superficial and deep. The points of suture were passed on each side as near as possible to the mucous membrane which was left on the posterior region of the larynx, so that after cicatrization the space occupied by the larynx would be reduced to a narrow channel. Thanks to the dressing with iodoform and sublimate; union took place by first intention, and the threads of the suture were removed on the sixth day. During this time the patient was easily fed by an œsophageal caoutchouc tube passed by the nasal fossæ. On the fifteenth day the tube was withdrawn and the patient was able to swallow without difficulty liquids and solid food. Now, by means of a special canula he speaks, and he is able to attend to his work.

Case II. Jules C., æt. 35, the subject of epitheloma of the larynx, causing paroxysms of suffocation so alarming that tracheotomy had to be performed on the 13th of February, 1886. This operation was rendered very difficult by reason of the shortness and obesity of the neck and the retraction of the larynx, which was situated behind the upper border of the sternum. Without the author's hæmostatic forceps and canula holder it would not have been successfully performed. On the 6th of March the tracheal wound was healed, but the patient still suffered such pain in the larynx and hæmoptyses that he wished for its excision. The general condition was so bad, and the relations of the larynx so disagreeable, that the operation was attempted, with much hesitation.

After introducing into the trachea a plug canula, a vertical incision was made in the middle line from the chin to the canula. The thyroid cartilage was thus exposed, its perichondrium detached from both surfaces and the two halves separated as in the preceding case. This time the operation was more difficult from the calcification of the cartilage. The mucous membrane was seen to be invaded by the cancer, and in parts thickened to the extent of 1 centimetre. It was widely removed. The cricoid portion of the larynx was not involved, and it was left untouched. On the other hand, the posterior and lateral parts of the larynx were so much implicated that they were completely removed, together with the arytenoid cartilages, and the anterior wall of the œsophagus as far down as the cricoid and the base of the epiglottis. An immense gaping wound was the result, exposing to view the pharynx and œsophagus. The results of the operation were less satisfactory than in the other case. The patient on the first day removed the œsophageal catheter which was badly adjusted, and which in the author's absence had been introduced into the cavity left by the larynx. In consequence milk injected through the tube had passed into the bronchi, and the next day it was necessary to re-open the wound and readjust the catheter in the œsophagus. The entrance of milk into lungs caused inflammatory action, which without preventing union by first intention in the wound, terminated in broncho-pneumonia, to which the patient succumbed. This accident would not have happened if its possibility had been foreseen.

The histological examination of the parts removed in these two cases was made by M. Cornil, who diagnosed in the first pavement epithelioma, and in the second a lobulated epithelioma.

In spite of the author's little experience in such cases, the operations were successful performed. In the first the patient was anæsthetized; in the second exhaustion was too great to allow of it. In the first, where the trachea was small, the plug canula was sufficient to plug the passage; in the second the closure was incomplete. This did not, thanks to the author's hæmostatic forceps, inconvenience the operation, but it was of consequence in feeding the patient.

As regards the operation, its peculiar feature is in the excision by

pieces. It consists of, first the median incision of the soft parts from near the chin down to the canula; second, the section of the thyroid cartilage through the middle of its anterior part, the detachment of the perichondrium by means of a scraper, and the separate withdrawal of the pieces by means of a flat-bladed forceps. If necessary the same procedure may be adopted for the cricoid. When the cartilages are removed, the internal membrane, which forms the anterior wall of the larynx, is exposed to view, and the diseased portions excised. Then by means of retractors placed on each side, the lateral and posterior walls of the larynx are examined, and the affected parts removed as widely as possible. Care being taken to preserve the external perichondrium, the operation may be accomplished without fear of wounding the vessels or important nerves which are near the surface of the larynx.

The operation over, the full view of the interior of the pharynx enables us to arrange in position a caoutchouc œsophageal catheter passed by the nasal passage. The hæmostatic forceps are then replaced by ligatures, and the wound completely closed by separate silk sutures, superficial and deep. The latter should be passed as closely as possible to the external perichondrium, to facilitate the union of its bleeding surfaces and to control the hæmorrhage. The dressing should be done with iodoform and sublimate gauze and wadding bandage. On the sixth day the latter is removed and the sutures withdrawn. On about the fifteenth day the patient can feed without the œsophageal tube which may be taken away; and the loss of the voice can be remedied by substituting for the tracheal canula another one furnished with an artificial larynx, such as Mathieu has constructed for the author's case, after M. Frauvel's instructions—similar to Gussenbauer's.

This operation has been objected to because it is liable to hæmorrhage and pneumonia. If the above rules are closely followed there will be no fear of loss of blood; and as for the pneumonia, it is not evident, if the immediate causes which produce it be guarded against, why a patient operated on should be more liable to it, rather than one who has in his larynx a painful malignant growth.

It may be said that the present statistics are not yet favorable to the

operation, but the reply is that such is always the case with big operations such as this, which, properly performed, will be one of the triumphs of modern surgery.—*Gaz. Med. de Paris*. April 17, 1886.

P. S. ABRAHAM (London).

IV. Four Cases of Tracheotomy, with Extraordinary Features. By Dr. K. K. REYER (St. Petersburg, Russia). Dr. R., senior surgeon of the surgical department of St. Mary's Hospital, St. Petersburg, has performed tracheotomy in the following four rare cases :

Case I. Milan K., Servian soldier, during the Servo-Turkish campaign had his trachea shot through by a bullet. He was subjected to *crico-tracheotomy* and recovered, but for some unknown reason he had the tube *in situ* for over a year. Once while cleaning the internal tube, he found that the extra-tracheal part of the other tube had separated from the intra-tracheal one, which dropped down into the trachea, causing a severe paroxysm of cough. Surgeons of Belgrad failed to extract the canula from the trachea, and the patient was sent to St. Petersburg. February 25, 1884, he entered the Mary's Hospital. He was suffering from bronchitis and dyspnœa. No foreign body could be found through the tracheal opening, and its very presence was doubted. March 23, laryngitis. May 1, dyspnœa, severe cough and chills. The patient prayed for an operation. No examination showed the presence of a foreign body in the trachea. In the beginning of August dyspnœa increased, fever set in, and bad smell from the trachea was perceptible. On August 17 Dr. R. performed *thermotomia trachealis longitudinalis ad maximum*. Not a single drop of blood lost. Dr. R. introduced his finger into the trachea down to the bifurcation, but could not find any foreign body. The patient was placed in the perpendicular position, head down, and was shaken. Then Dr. R., with his finger, felt something hard in the right bronchial tube, but that was only for a moment, for with inspiration the foreign body was drawn in deeper. After repeated shakings of the patient, with head down, at last Dr. R. succeeded in extracting the canula with the curved polypus forceps. The canula was of hard rubber. For six

months after the operation the patient was suffering from cough and dyspnœa. The tracheal fistula could be closed only after repeated plastic operations. On February 17, 1885, the patient left the hospital quite cured.

Case II. Civil officer A. M., æt. 46, entered the hospital June 2, 1884. He had *carcinoma linguæ*. On July 26 the left part of the tongue was removed. On July 28, asphyxia from unknown cause. Electricity, oxygen and artificial respiration had no beneficial effect. Dr. Reyer performed the usual tracheotomy, but it was to no purpose; cyanosis was setting in. Then Dr. R. performed *tracheo-incisio longitudinalis ad maximum*. The trachea was explored thoroughly, but no foreign body found. Dr. R. introduced his finger down to bifurcation and found that the trachea below the jugulum was closed by an aneurism. Pressing with his finger against the back part of the trachea Dr. R. opened a free passage to the bronchial tubes, and respiration was restored. Then Dr. R. introduced the spring canula of Koenig, which thus saved the life of the patient. The patient was improving and could breathe freely with canula removed. On September 7 the opening in the trachea was closed, and on September 22, the patient left the hospital. However on the next day asphyxia took place. A new tracheotomy was performed and Koenig's canula again introduced. On October 20, in the morning, hæmorrhage; in the evening, asphyxia. Dr. Levitsky, in whose charge the patient was, wanted to examine the canula, but in his hand was left only the external part, while the internal, having somehow separated, dropped into the trachea. Dr. L. cut three rings of trachea, but could not reach the canula. Dr. Reyer arrived, extracted the canula and fixed it. Next day the aneurism burst.

Case III. Female, of a syphilitic family, since childhood was suffering from syphilitic laryngitis. After marriage she had syphilitic ulcers in the throat. She had dyspnœa for several years. In January, 1885, she caught cold—*pneumonia dextra crouposa* and *stenosis laryngis luetica*. On February 3, being in a dangerous condition, she was brought into hospital where tracheotomy was performed at once. On March 3 she left the hospital cured of pneumonia. She could not

breathe without the tube more than half an hour. On August 26 the patient again was brought into hospital, suffering from a severe dyspnoea. She was in the fourth month of pregnancy. On September 1, asphyxia, which was relieved by introducing the Koenig tube. September 3, *thermotomia trachealis longitudinalis*; trachea below the opening was found reduced to the size of a quill. The Koenig's tube was introduced into the narrowed portion of the trachea, September 6 a tube $\frac{1}{4}$ cm. was introduced instead of the Koenig's, and gradually tubes of a larger diameter were introduced. On December 25 the patient left the hospital; the tracheal canal was enlarged four times. In the end of March was expected the delivery. It was thought dangerous or at least very inconvenient to leave the Koenig's tube in the throat during the labor. Therefore a tube of soft rubber with an end of the vulcanized rubber was introduced instead, and the patient was safely delivered. The patient was examined on May 13, 1886; she wears a silver canula all the time. On having closed its opening she can talk distinctly and loud.

Case IV. Ivan T., peasant, æt. 21, suffering from dyspnoea, was admitted to the hospital April 28, 1886. Two years ago he was subjected to tracheotomy and since then he had the tube which, on April 27, has split into two, the lower end having dropped into the trachea. On April 29 Dr. Reyer has performed *thermotomia trachealis longitudinalis*. No foreign body could be found. The patient was placed in the perpendicular position, head down: then Dr. R., on having introduced his finger, felt the canula at the bifurcation. Due to its gravity, the tube gradually approached the opening and was extracted.

The three former cases were reported by Dr. A. Kroetsky, and the last one by Dr. R. Weber. Dr. K., who witnessed the operations described by him, comes to the conclusion that the presence of a foreign body in the trachea and bronchi cannot be always proved by physical examination, that turning man head down must be resorted to in certain cases, and that Koenig's tube is invaluable in some cases of tracheotomy.—*Chirurgichesky Vestnik*. July. 1886.

P. J. POPOFF (Brooklyn).

ABDOMEN.

I. Strangulated Umbilical Hernia in a Pregnant Woman.
Operation. Death. P. BERTHOD. On December 23, 1885, the patient, æt. 40, was admitted to Saint Louis Hospital under M. Le Dentu, suffering from strangulated umbilical hernia. She was three months gone in her fourth pregnancy, and since the first one had suffered from an umbilical hernia, which a bandage had hitherto controlled without inconvenience. Eight days before admission the hernia had caused pain so that the bandage had to be left off, and six days later, when attempting to lift a weight, she felt the pain became suddenly worse, and symptoms of strangulation appeared. Taxis failed so the sac was opened, a mass of fat ligatured and cut off, and a knuckle of bowel having been freed of one or two adhesions was reduced. The sac was sewed up with catgut and the skin with horse-hair—Listerian dressing. Symptoms of peritonitis appeared on the 25th. Vomiting and severe hiccups came on and she died on the morning of the 26th of December. No post mortem examination was obtained. The author draws attention to the frequent association of peritonitis with umbilical hernia when strangulated. This case gives little support to the view that the peritonitis is apt to spread below the diaphragm and paralyze it, as there was no dyspnoea, although aggravated hiccup. He states that the shock of the operation had no further effect on the pregnancy than to cause some uterine hæmorrhage on the two nights following the operation. The first stopped spontaneously, the second was checked with an injection of hot water, but there was no threatening miscarriage.—*Gaz. Med. de Paris.* May 22, 1886.

II. A Case of Strangulated Internal Hernia into the Foramen of Winslow. J. E. SQUARE. A clerk, æt. 25, dined in apparent health at noon on May 7, walked about a quarter of a mile to his office and at 2 p. m. was seized with excruciating pain in the epigastrium. He returned home at once with difficulty, was given brandy and water and a dose of castor oil, and at 4 p. m. began to vomit. Pain and vomiting continued, with two sleepless nights, until the 9th when he was easier and sat out by the fire. In the evening the symp-

toms returned as before. On the following evening—10th of May—Mr. Square saw him for the first time at 7 p. m. The patient was then in a most excited and restless state, with difficulty kept in bed; face anxious and somewhat pinched, axillary temperature 103.4° , pulse 122, regular and small. He had not vomited for an hour or two. The former pain over the ensiform cartilage, which had been excruciating, had subsided. The legs were not drawn up, and the abdomen seemed natural. There was marked tenderness around umbilicus and at epigastrium, but nowhere else. Resonance all over abdomen, except at flank; bowels bound since morning of 6th, no albumen in urine. Intestinal obstruction was diagnosed, and an enema of warm water and soap administered without effect. A larger enema in three hours caused a fluid stool with two solid faecal masses. The vomit was now faecal. At 3 a. m., on the 11th, Mr. Square was hurriedly sent for; the patient was now in a most childish condition, so restless that he could neither be kept in bed nor be prevented from throwing off the bed clothes. Hands and feet cold and clammy; pulse feeble, though quite conscious. After hypodermic injections of morphine he was left moderately quiet at 4:30 a. m. He became quieter and sank at 7 o'clock after an illness of three days and seventeen hours. At the post mortem only a small amount of peritonitis was seen on first opening the abdomen. Great omentum drawn in among the small intestines to left of middle line, and moderately congested. Intestines distended with gas, but with little faeces. Fully eight inches of the ileum about two feet from its caecal end were firmly incarcerated in the foramen of Winslow, and were with some difficulty withdrawn. Its mesentery was much congested, the intestine much more so. No perforation or ulceration through the coats of the intestine. Margins of the foramen rounded and thickened—two fingers easily admitted. Caecum freely movable and furnished with a meso-caecum. Mr. Square believes that an early operation would have been successful.—*Brit. Med. Jour.* June 19, 1886.

CHARLES W. CATHCART (Edinburga).

EXTREMITIES.

I. Primary Tuberculous Synovitis of the Tendinous Sheaths of the Wrist and Hand. MM. JARDET and NOTTA. A farm laborer, æt. 59, strong and always healthy, no phthisical history, personal or family, developed a fluctuating swelling on the palmar surface of the lower arm and wrist, painful, impeding the movements of the fingers, and giving the characteristic sensation of crepitation of the rice-grain cysts. The tumour removed from the arm contained no liquid nor vice bodies, but was filled with loose false membranes, its wall very thick and forming a kind of cylinder, becoming thin at and extending beneath the annular ligament. When cut into a very little liquid similar to synovial fluid could be squeezed out. It was dissected out and a 5% phenilic solution injected. The patient was discharged cured in twelve days, and was soon able to resume his work.

The histological examination showed that the false membrane consisted entirely of fibrin, and that the wall contained tubercles composed of embryomal cells and giant cells. No bacilli were found.—Soc. Anat. Oct. 1885. *Le Prog. Med.* Feb. 6, 1886.

P. S. ABRAHAM (London).

II. On the Mechanism of Trigger-Finger. By Dr. STEINTHAL (Heidelberg). S. had the opportunity of examining the right middle finger which had been exarticulated at the meta-carpophalangeal joint for post-inflammatory ankylosis (interphalangeal joint at a right angle). He first cut through the flexor-tendon over the ankylosis, whereupon motion became again free, but had the trigger form. This affected both flexion and extension; it was most marked in the first interphalangeal joint. Its cause was found in the action of the lateral ligaments their insertion at the base of the second phalanx being somewhat displaced towards the palm.

The fibres of the lateral bands became more and more tense on slowly flexing the finger up to an angle of about 45° when on further flexion the two insertion points began to approach and the previous tension passed into the trigger motion. The same thing occurred dur-

ing extension, only that here the volar fibres of the lateral bands became tense the dorsal lax—the opposite occurring on flexing. König had made a similar observation on the amputated phalanx of a toe. Only in his case an unequal elevation on the cartilaginous part of the basal phalanx made the lateral ligaments in a certain position very tense; then on further flexion or extension the articular surfaces came so into apposition that this prominent spot no longer had to bear the chief pressure. At that moment with the relaxation of the ligaments the peculiar snap occurred. In S's case the displacement of the bands came from the previous inflammatory process. It was evident from the preparation that the extensor tendons had been principally attacked. After they had necrotized, the action of their antagonists prevailed. These were also altered. Both flexor tendons were adherent to each other and their sheaths, the latter being somewhat thickened and proximally contracted. But flexor tendons and their sheaths are connected with the joint capsule and its lateral ligaments—the sublimis tendon being connected indirectly by slight strands of connective tissue running to the bottom of its canal—and the volar accessory band is a transverse radiation of the lateral ligaments. Contraction of these parts must have caused the mentioned displacement. He believes that in many cases as here, where externally no alteration of tendon or joint apparatus can be felt, the peculiar motor disturbance may depend on a like cause.—*Centbl. f. Chirg.* 1886. No. 29.

(Two cases of trigger-finger—the first reported in America—are described by Dr. G. W. Jacoby. In the one closely examined there was no nodosity or other palpable mechanical cause. N. Y. Neurolog. Socy. reprinted in *Jrnl. of Nerv. and Ment. Dis.* 1886. July.

GENITO-UPINARY ORGANS.

I. Retroperitoneal, and Retro-and at the Same Time Intraperitoneal Incision as a Method for Exposing Tumors of the Kidney, Especially of Inflammatory Origin. By Prof. KÖNIG (Göttingen). With the old lumbar incision there is great difficulty in getting free access to the kidney. K. offers a partially new method based on studies on the cadaver as well as operations on the living.

He cuts through the soft parts straight down from the last rib, along the border of the erector spinæ muscles to within a few centimeters of the os ilium. He then curves around anteriorly in the direction of the navel and ends at about the external border of the rectus abdominis—if necessary even through this muscle to the umbilicus. It may often be advisable to make the cut not perpendicular but oblique, in a flat curve running into the umbilical part. All the muscles in the course of the said cut are incised quite down to the peritoneum where this is beneath; in the horizontal part the first is the latissimus, then the oblique and transverse abdominal muscles. The separate muscle ends may be secured by correspondingly knotty threads if desired.

This gives a surprisingly free entrance, but it can be considerably improved by introducing the hand through the perpendicular part of the cut, separating the peritoneum in front and pushing it forwards. He proposes to call this the retroperitoneal lumbo-abdominal incision.

If sufficient space is not thus afforded, or if for diagnostic or operative purposes it is desirable to approach the tumor from the abdominal cavity, the peritoneal fold can be divided in the transverse cut. If infectious material is to be removed this peritoneal opening must be carefully looked after—sewed up if possible.

This he calls retro-intraperitoneal lumbo-abdominal incision.

Two recent cases illustrate his methods. (1.) Old pyelonephrosis, colossal calculus of pelvis of kidney. Removal of stone only possible by the additional peritoneal opening. (2.) Vesical catarrh. Stinking pyelitis. Also operated according to the second method. Cure in both cases, except small remaining fistulæ.

He warns, finally, against the danger of abdominal hernia where the after treatment is too greatly hastened. "I allow the threads, especially the deep retaining suture—if they do not get very loose and this rarely happens under aseptic conditions—to remain three weeks, and keep the patient in bed four weeks. For a time after this only gentle motion, such as can not at all strain the abdominal walls is permitted, and a belly-band is worn." In this way abdominal herniæ do not result.—*Centbl. f. Chirg.* 1886. No. 35.

WOUNDS.

I. Demonstration of a Healed Shot Wound of the Spine.

By Prof. CZERNY (Heidelberg). The unfortunate injury of President Garfield gave occasion a couple of years since to a debate on shot wounds of the vertebræ. Esmarch's investigations showed that the number of cases which, in a surgical sense, at least, could be considered cured was very small. I therefore take occasion to present a case which can be called a healed shot wound of the cord as well as vertebra.

A young woman, æt. 22, while at her toilet, was shot in the back by her jealous husband, May 6, 1873. The ball entered one half inch to the left of the last dorsal spinous process. She sank with a cry. The man shot himself dead. I was called soon and found paraplegia, both legs paralyzed to the pelvis, and sensory paralysis on the right to the inguinal fold, on the left of the knee. Reflex irritability was entirely preserved, and all the paralyzed muscles reacted promptly to weak faradic currents. No twitching or contracture in the said muscles. Bladder and rectum were completely paralyzed. Catheterization for three days when the bladder emptied involuntarily on getting full. Pulse and temperature normal, mind always clear. The course of the ball and the complete immediate paraplegia pointed to the conclusion that the cord must have been perforated by the ball. Presumably the bullet had lodged in a vertebra as no symptom of injury to the abdominal organs was noticeable. I therefore did not consider myself justified in sounding, washed the wound superficially with carbolic, covered it with carbolized cotton, and thus the wound healed in a few days. The patient could soon sit propped up in bed, and was placed in a reclining chair after fourteen days. From the beginning of June she rode about several hours daily in a roller chair and continued this, weather permitting, until late in the fall: meanwhile her appetite continued excellent, general condition good and her appearance notably fresh and bright. In the early weeks the paralyzed muscles were faradized daily, yet contractility gradually disappeared. This so excited the patient that further faradization had to be dispensed with. The legs, which so far had remained lax, became stiff and inflexible at the end of

summer, and began to atrophy with remarkable rapidity. In November decubitus developed, starting from urine excoriation, and spread rapidly over the sacrum. From this on there was fever, and the fatal end (Dec. 4, 1873) was hastened by an erysipelas spreading from the wound over the whole back and thigh.

The ball was found healed in between the last dorsal and first lumbar vertebræ, to the right of the middle line. The spinal cord was almost completely severed, that below being somewhat thickened, whilst upwards to the second dorsal vertebra it was in a state of suppurative softening. The dura mater presented a scar at front and back, where it was also adherent to the bone. Pulmonary atelectasis of moderate degree, somewhat fatty liver, chronic cystitis.

The objection may be made that a suppuratively softened cord is not a healed cord. We know how difficult it is to distinguish yellow softening of the brain from a fresh abscess, yet to me the preparation makes more the impression of an acute ascending myelitis than of an abscedizing. Then it must be noted that the patient rode about several months in subjectively good condition, and that the bullet was completely encapsulated.

Since before the time of antiseptics a severe shot wound of the spine has healed through the avoidance of probing and by careful washing out, a similar result ought now with like care to be all the easier achievable.—Report of XV Congress of German Surgeons in *Centbl. f. Chirg.* 1886. No. 24.

W. BROWNING (Brooklyn).

TUMOURS.

I. Myxo-Sarcomatous Tumour of Abdomen, Weight 8 Kilo. 120 (lbs. 18) Growth in 32 Days. By M. CHASSAGNE. D., æt. 24. Sergeant in an infantry regiment, previously in good health, complained of a vague pain in the hypogastric region, worst behind, on May 29, 1884. There was no swelling, and it was thought to be of no consequence. Two days afterwards he was admitted to hospital, with abdomen hard and somewhat distended, and complaining of a steady, fixed pain, as before. His bladder was sounded without result. Ab-

domen gradually increased in size, and pain continued, and at the end of eleven days he was sent to another hospital, being now seriously ill. Diagnosis, ascites. His face was pale and pinched. Temp. at 5 p. m. 103° F. Tongue dry and furred. Abdomen was hard and voluminous, with a shape resembling that of pregnancy rather than that of ascites. No irregularities to be felt on palpation; signs of ascites negative. By June 19 there was great œdema of legs and abdominal wall, with distention of superficial veins. Pain continuing, on June 23, after some hesitation on account of the universal dulness, the abdomen was tapped below the umbilicus, but only thick, bloody fluid was drawn off, rapidly clotting. Ice applied to the abdomen relieved the pain and reduced the temperature. In two days he was again tapped, with a similar result. On the evening of June 30 he had regurgitant vomiting of even liquid food, and on the morning of July 1 he died, thirty-two clear days after his first complaint, on May 29. At the post-mortem examination an enormous solid mass was found occupying the abdominal cavity and hiding all the viscera except a part of the transverse colon, which was pushed forward; the ascending and descending colons were embedded in the tumour, the stomach was compressed and pushed up, and the small intestines were forced up into the left hypochondrium. The spleen, kidneys and liver were compressed, but apparently normal. Mesenteric vessels, abdominal aorta and inferior vena cava diminished in size. The tumour consisted of a pale outer, myomatous, jelly like part, and a central portion, dark red in colour and fibrous in texture, with a jelly like fluid in its interstices. The author states that the rapidity of growth of this tumour is unique. No similar case that he can find recorded took less than one year to grow, and some took as long as seven years. The post-mortem examination shewed that any attempt to remove the tumour would have been hopeless, even had an exploratory incision revealed its true nature.—*Gaz. Med. de Paris*, May 8 and 15, 1886.

C. W. CATHCART (Edinburgh).

BONES, JOINTS, ORTHOPÆDIC.

I. Excision of the Hip of a Girl Suffering from Pulmonary Tuberculosis ; Considerable Amelioration of the State of the Lungs. By H. BRESSON. The following case bears on the question, still in dispute, of surgical intervention in tuberculous subjects. E. G., æt. 9 years, came under treatment May 16, 1885, for hip disease on the left side. No precedent tuberculous history, either personal or family. The beginning of the disease was obscure: for two months there was pain and lameness, and the child was kept in bed for four months. She then went about for six months, until the pain and lameness returned. The limb now shortened and rotated inwards, and soon intense pain at the knee forced the child to go back to bed. The cautery was used without result, and the condition became worse. She was then kept in immovable apparatus for three and a half months, and was afterwards free for six months, her condition having improved. At this time she already coughed a great deal; was pale, thin, without appetite, and with persistent diarrhoea, no albumen in the urine, consolidation at the apices of the lungs, moist râles, etc. The following month an abscess appeared at the upper and outer part of the thigh. At the commencement of July, aggravation of the symptoms suddenly took place, with sub-acute inflammation of the joint, and strong fever was observed on the 21st. The purulent collection was opened under strict antiseptic precautions. Throughout the month of August the temperature oscillated between 38° and 40° . Although the tuberculous condition of the lungs caused a long hesitation, at the urgent request of the family, and in consequence of the daily aggravation of the child's condition from the copious suppuration, Dr. Cazin determined to excise the hip, which was done on August 30. The temperature fell from 40.2° and oscillated between 37° and 38° for a fortnight, when it returned to the normal. The wound, which was scraped at the bottom by Volkmann's spoon, united by first intention, and presented nothing untoward. Six weeks afterward a silicated apparatus was applied and the child began to walk with crutches. Since two months she has quitted the infirmary, her condition becoming better every day, appetite returned, sweats and diar-

rhea disappeared putting on flesh, and the stethoscopic signs considerably improved. On March 1 there was scarcely any appreciable dulness at the right apex, and only at the sub-spinous fossa of the same side can a little crepitation be heard on coughing. The child wears no local apparatus, can walk without crutches, and the limb is only shortened $1\frac{1}{2}$ centimetres.

Her condition at the time of operation was almost hopeless; six months after her general health was as satisfactory as possible. The result, no doubt, depended largely on the strict antiseptic precautions; and in freeing the patient from the constant loss by suppuration, her system was put in a better position to resist the pulmonary lesion.—*Le Prog. Med.* Aug. 14, 1886.

P. S. ABRAHAM (London).

GYNÆCOLOGICAL.

I. On the Use of Sublimate in Obstetrical Irrigations. By Prof. G. BRAUN (Vienna). In Braun's clinic from October, 1884, to November, 1885, sublimate injections of 1 to 1,000 strength were made in 475 out of 3,101 births, with nine deaths. The 475 cases represented operative deliveries, street births, macerated fetuses and puerperal endometritis. For uterine irrigation it was customary to use $1\frac{1}{2}$ litre and to immediately follow by irrigation with a like amount of water.

His principal conclusions are: (1) After puerperal irrigation, vaginal or intra-uterine, with sublimate solution, absorption from the vagina occurs very easily. (2) Proof of mercury in the fæces can be furnished very early. (3) Any impediment to the discharge of the wash-fluid from the vagina may thus give rise to its rapid absorption. (4) A concentration of 1 to 1,000 in the amount of 1 to $1\frac{1}{2}$ litre should only be used in severe cases—tympantites uteri, putrid fetus in utero, septic puerperal fever—and then only for one minute. This should be followed by irrigation with an equal or greater amount of distilled water. (5) A strength of 1 to 4,000 may be used after the birth of a putrid fetus, in endometritis sub partu, after instrumental delivery, where the vaginal discharge is stinking, etc. After-irrigations with water should not be forgotten. (6) The irrigation should be

made by the physician in person, only a low pressure should be used and the procedure completed as rapidly as possible.

(7) Sublimate irrigations ought not to be frequently repeated, and not to be used at all where there is a large vulvar wound surface, where the patient has been under mercurial treatment, is troubled with kidney disease or is anæmic from previous metrorrhagia.—*Wien. Med. Woch.* 1886. Nos. 21 to 24.

W. BROWNING (Brooklyn).

II. Clinical Remarks on a Fourth Series of Twenty-Five Ovariectomies. By F. TERRIER (Paris). This careful analysis enters into a discussion of the chief points of interest in these cases. An elaborate table is drawn up and the details of the more important cases are also given in full. The subject matter is considered under various headings, thus :

1. *Age of the patients*—17 of the 25 were over 41, i. e., 1 over 60 (64 died of cancer and peritoneum) ; 7 between 50 and 60, 9 between 40 and 50, 5 between 30 and 40, 2 between 20 and 30, 1 under 20, i. e., æt. 15.

In the 100 cases there were 36 between 40 and 60, 21 between 30 and 40, and 20 between 14 and 30.

2. *Menses* of the 25 patients 11 ceased to menstruate at the time of operation, 3 had ceased a few months before, 7 were regular, 2 irregular and 6 suffered from metrorrhagia, 8 had reached the menopause at periods varying from six months to thirteen years before the operation (out of the full 100 cases 28 had reached or passed the menopause). Attention is drawn to the fact that of the seven cases of regular menstruation 3 had disease of both ovaries, in the form of cystic degeneration, papillomatous growths, or a dermoid cyst.

3. *Fertility*.—In the 25 cases 3 were virgins, 4 had borne no children, 4 had borne one child, 5 two children, 4 three children, 2 four children, 1 five children, 1 eleven children, i. e., 18 out of the 25 had borne children. We are asked to remember that the most fertile time of life is below 30, while in most cases the operation was performed after 30. In the 100 cases 11 were virgins, 63 had borne children, 26 had not—making $\frac{2}{3}$ of those operated on having had children. There

had been eight miscarriages in the last series of cases; in three, however, the growth of the ovarian cyst did not seem to have been the determining cause.

4. *Duration of the Tumor.*—In 8 patients the growth of the tumor had been noted for eight months, in 9 patients for eighteen months, in 3 for three years, in 1 for four years, in 2 for six years, in 1 for seven years, in one for fifteen years.

5. *Morbid Phenomena.*—In 5 there had been swelling only, in 12 sharp pain, in 3 excessive swelling. *Vomiting* had been present in 5 of the cases, one of these being a cancerous infiltration of the peritoneum. *Ascites* was observed in 8 of the cases. It was generally slight, and in 3 especially so. In 2 of the 8 ascitic cases there were papillomatous growths of both ovaries. These the author explains by supposing that the ascitic fluid is secreted from the surface of the tumour, as if it were a compound cyst with its secreting surface turned outwards. In another the fluid was viscous and was apparently the secretion of several small cysts which had burst and discharged their contents into the peritoneal cavity. *Edema* of the legs was present in 8 of the cases, 3 having in addition phlegmasia dolens, and 2 œdema and lymphatic œdema of the abdominal wall.

6. *Pulmonary Trouble.*—There had been 1 case of bronchitis, 1 of obstruction to the respiration from the enlarged abdomen, 1 of double pleurisy before and after the operation, 1 of pleurisy after it.

7. *Bladder and Urine.*—Increased frequency of micturition in 8 of the cases, painful micturition in 2; quantity of urine generally normal; in no case sugar; in 2 of the 5 fatal cases a slight quantity of albumen.

8. *Operative Methods.*—Exploratory or evaculatory puncture in 17 of the 25 cases. Ligature and reduction of the pedicle where possible, and Lister's antiseptic methods. In 22 of the 25 cases the pedicle was returned. All of these were tied with carbolized silk ligatures, dressed in Thorton's way, 2, 3 and 4 of them being used according to the size of the pedicle. Three cases were incomplete, one being fatal; in the other two a ligature was applied to the base of the pedicle to cause atrophy, with an apparently good result. The time occupied by the

operation from sixteen minutes to one and a half hours. In the successive four series of cases the average time became shorter as the operator gained experience, i. e., in first series, $1\frac{1}{2}$ hours; second series, 1 hour; third series, 50 minutes; fourth series, 47 minutes.

The *weight* of the tumors removed varied from 18 kilograms to 1,240 grms.

Five fatal cases are specially detailed. The cause of death in each was attributed as follows: In one there was suppurative peritonitis, associated with choleraic symptoms. Several cases of epidemic Cholera had been observed in Paris at the time of the operation, and some of these had been treated at the same hospital as this patient, i. e., l'Hôpital Bichat. In another case there was acute non-suppurating peritonitis. This patient's health was in a depressed condition at the time of the operation, and the spleen, liver and kidneys were shown at the post-mortem examination to have been diseased. In a third case malignant affection of the peritoneum was the cause of death. This was one of the incomplete cases. In a fourth, frequent and excessive hæmatemesis. This symptom has been observed several times and is not easily explained, possibly by congestion of the gastric mucous membrane, or perhaps by epithelial new growths from the wall of the stomach—previously unsuspected. In the last case death was caused by the great hæmorrhage which resulted from the division of the numerous adhesions.

9. *After Effects*.—Cicatrix varied from 6 to 25 cm. ($2\frac{3}{4}$ in. to $9\frac{7}{8}$), became keloid in 2, was much pigmented in 2, and became very red and vascular in 2. There was a tendency of the cicatrix to bulge in 11, being slight in 5, and very considerable in 1. A fistula remained in the 2 incomplete cases which survived.

In 8 of the cases menstruation returned; in 4 it did not. Of the 3 cases of second ovariectomy 2 had no return of menstruation, while in 1 case* the return was distinct. Only one patient became pregnant after the operation, and in this case the child died at birth. Many of the women grew stouter after the operation. This the author considers to be due to removal of disease rather than to any special effect of the loss of ovaries.

The conclusions drawn are:

(1) That ovariectomy is required after the age of 40 as well as before it; 77% of the cases were over 30 and many beyond the meno-pause.

(2) The presence of ovarian cysts, even on both sides, has but slight influence on menstruation except in so far as the effect on the general health indirectly affects the appearance of the menses. The relation of ovarian tumour to fecundity is doubtful.

(3) The growths and accidents of ovarian tumours vary in proportion to the rapidity of growth.

(4) Ascites results not merely from solid tumours, or polyp-like vegetations of the ovaries, but also from cancer of the peritoneum, and from a degeneration of the wall of certain cystic growths which causes irritation of the peritoneum.

(5) Affections of the pleura before and after the operation are not exceptional and difficult to explain.

(6) Micturition is seldom affected, and is of less importance than the urine itself. A diminished quantity indicates a reserved prognosis; albumen even in small quantity, would make it serious.

(7) Incomplete operations give indifferent results and a serious prognosis. Possibly ligatures to cause atrophy may prove of service in these cases.

(8) Lister's method of treatment seems quite applicable to ovariectomy, as is borne out by the results obtained.

(9) Weight of removed tumours runs from 17 kilo-500 grms. to 1,000 grms

(10) Five deaths, as referred to above.

(11) Malignant affections of the peritoneum or colon sometimes co-exist with ovarian cysts. There seems to be some relation between them, which the author proposes to consider at some future time.—*Revue de Chirurgie*. March 10. 1886.

C. W. CATHCART (London).

III. Case of Pelvic Abscess in an unusual Position, Simulating Soft Fibroid Tumour of Uterus. A. H. N. LEWERS, M.D., M.R.C.P. The patient, a woman, æt. 37, had had nine children and three miscarriages. Was confined four weeks previous to admission to London Hospital. With exception of rather

profuse loss of blood, the labor was normal. On the tenth day, when getting up, she noticed a swelling in abdomen. She was obliged to again go to bed, but only felt pain in hypogastrium on moving. A smooth elastic swelling was felt rising up from the pelvis to the level of the umbilicus—not tender. It was dull to percussion and symmetrical. Under ether, the urine having been drawn off, a swelling was felt in front of cervix depressing the anterior fornix. Bimanually this swelling was found continuous with that already noted in the hypogastric region. Uterus movable, and tumour moved with the organ. Fundus of uterus not clearly made out. Sound passed $3\frac{1}{2}$ inches. Diagnosis—probably soft fibroid. The tumour was afterwards aspirated from the abdominal aspect by puncture midway between pubes and umbilicus. A pint of most offensive pus was drawn off, and tumour entirely disappeared. The tumour abscess filled again, and was ultimately opened antiseptically. Patient made a good recovery.—*Lancet*. March 6. 1886.

IV. Case of Fatal Hæmorrhage into the Abdominal Cavity During Menstruation. EDMUND J. PENNY, M.R.C.S.E. When Mr. Penny was called to the patient life was extinct. Her husband stated that she always enjoyed good health and was the mother of two children. She was 27 years of age. About 7 p. m. on the evening preceding death she complained of pain in region of stomach, which she attributed to the fact that she was menstruating. She gradually grew worse and suffered from dyspnœa. Shortly before 4 a. m. she became rapidly worse and died.

Necropsy.—Thoracic organs healthy. On opening abdominal cavity a large quantity of dark fluid blood immediately escaped, and the whole of the right side of the abdominal cavity was found to be full of fluid and semi-coagulated blood, while the right iliac fossa was occupied by a tolerably firm clot. Viscera found to be healthy. Blood vessels intact. On removing blood clot from iliac fossa it was found to lead to the right ovary, and a small, but firm clot, at least an inch in length, was found attached to the outer surface of that organ. Two ruptured Graafian follicles were seen, to one of which an ovum was adherent, and in the neighborhood of these several small blood vessels

were found to be distended with clot, one of them being distinctly ruptured; and it was to this site that the clot was adherent.—*Brit. Med. Jour.* March 20, 1886.

H. H. TAYLOR (London).

V. A Cysto-Fibroid of the Labium Majus Weighing Six Pounds, Complicated by Pregnancy. By Dr. J. ZIELEWICZ (Posen). The author distinguishes clinically two forms of fibroma of the larger labia. In the one the tumour owes its origin and development to the connective tissue of the labia, grows mostly in an outward direction, and is attached by means of a pedicle. In the second form—clinically of much more importance—the fibroids have a deeper origin, being attached to the pelvic fascia to the periosteum of the pelvis, or to both, and have a broad base and a more rounded form. These tumours cause the patients great distress by the continual dragging on the surrounding parts, urethra, rectum, etc.*

Zielewicz reports the following case: Patient, æt. 31, multipara, and healthy until two years previous, when, after her last confinement, she remarked a small lump in the region of the left larger labium. The swelling increased in size, causing her much pain and rendering her eventually unable to walk. Patient not able to stand for a year past. She became pregnant eight months ago. On examination a large round tumour was found, 59 cm. in circumference at its largest diameter, with an uneven surface, and situated in front of the introitus vaginæ. The neoplasm was solid but elastic, having on its left side several fluctuating cysts. The left larger and smaller labia completely diffused into the covering of the tumour, those of the right side being unaffected. The introitus vaginæ displaced so much that two fingers could with difficulty be introduced into the vagina. The orifice of the urethra chafed and drawn to left side, and rectum much prolapsed. Tumour almost immovable. Pregnancy of eight months. Extirpation decided on. In the meantime, however, patient had a violent chill, following which cessation of the foetal heart-tones, and in the night before the operation she was delivered of a dead child. Sixteen days later operation. Incision was in the region corresponding to the left labium, the tumor being easily dissected off from the pelvic

fascia. The large, deep wound was closed as much as possible by sutures, and the damage done to vagina repaired by plastic means. During the operation the rectum was incised for the length of 2 cm. by accident. Catgut sutures were applied to the latter, and no further trouble resulted. Dressings of iodoform and bi-chloride gauze applied, and a catheter was introduced and left, to prevent soiling of the bandage with urine. Duration of operation, one hour. Patient rallied well, but had considerable fever during the following four days. Three weeks later had an attack of exudative pleurisy. Discharged cured in about two months from time of admittance, having fully recovered use of her lower extremities. The tumour, weighing 2,965 grammes, was a pure fibroid, without muscular fibres, and very vascular. This form of fibroma appears to be very seldom. Zweifel, in his work on the diseases of the external female organs, published in 1885, simply refers to the opinion of Kiwisch, that such tumours do exist, but reports no case of his own observation.—*Deutsch Med. Wochensch.* No. 24. June 17. 1886.

C. J. COLLES (New York).

VI. The Sac and Contents in a Case of Tubal Pregnancy Removed by Laparotomy. By H. A. KELLEY, M.D. (Philadelphia). The patient had become pregnant seven months previously, her menses recurring four months thereafter. Examination revealed an elongated, ovoid, tense cyst, about three and a half inches long by two and a half wide, lying on the right side and in the plane of the superior strait, which was diagnosed as the product of an extra-uterine gestation. The fact that the patient was constantly suffering pain from the tumour and deteriorating greatly in health and spirits, the possible subsequent discharge of the foetal parts by protracted suppuration, and the facility of the operation—bi-manual examination revealing all the peculiarities of the case before the section—caused the writer to decide upon its removal, which was accomplished successfully, with no antiseptic agent except extreme cleanliness, the right Fallopian tube being removed with the tumour, which contained a mummifying foetus, measuring five and three-quarters inches in length. Recovery was rapid.—*N. Y. Med. Jour.* 1886. May 29.

VII. Removal of the Remains of a Fœtus by Abdominal Section, in a Case of Extra-Uterine Pregnancy of Seven Years' Duration. By J. HOMANS, M.D. (Boston, Mass.)

A woman, æt. 35, had apparently passed the full term of gestation, which had been diagnosed as extra-uterine, without parturition. After a little more than a year of pregnancy, the patient's health improved, and she was able to resume her ordinary avocations, which she continued for the ensuing six years, in spite of the size of her abdomen, menstruating regularly, but not conceiving. At that time she began to suffer from severe abdominal pain; a tumour formed by impacted feces was discovered and cleared away, there being left a firm, hard mass in the left hypochondriac and iliac regions, from which oily and pus-like fluid was drawn by aspiration. Dermoid cyst of the left ovary was diagnosed, and ovariectomy for its relief proposed. On operation, an ovarian cyst was found and emptied, but underneath it, and almost in the middle line, was another cyst, about the size of a man's head, its covering membrane being continuous with the peritoneum of the intestines and bladder. It was found to contain a fluid in which fatty, granular detritus was suspended and in which all the bones of a fœtus at term were found. The sac and the abdominal cavity were thoroughly cleansed and the walls of the former stitched to the skin of the abdominal incision, and drainage provided. The patient did not rally from the operation, however, but died four hours later.—*Boston Med. & Surg. Jour.* 1886. May 20.

VIII. Case of Vagina a Minute Canal, with Cure, in the Course of which a Gastro-Vaginal Fistula was Established and Cured. By J. R. CHADWICK, M.D. (Boston, Mass.) A married girl, æt. 16, had, *in locum vaginae*, a minute canal passing from a blind pouch just within the vulva, three and a quarter inches toward a normal uterus. Rupture of the parts with forceps and finger and distension with a glass plug established a satisfactory vagina. During the treatment the patient was affected with a large abscess, extending from half way between the pubis and umbilicus nearly to the ribs on the right side of the abdomen and discharging constantly into the intestine, high up. The patient was an enormous eater. The abscess was

aspirated, at first, through the abdominal walls, and, later, through the top of the artificial vagina. In the attempt to establish permanent drainage, the canula of the trocar was left in the puncture, but, incommoding the patient, an attempt was made to replace it with a soft rubber catheter, but fruitlessly. In desperation at the failure, the trocar was again thrust forcibly into the tumour and withdrawn, leaving the canula, plugged with a cork, in the puncture. On withdrawing the cork for drainage the next day, the characteristic contents of the stomach were found in abundance in the discharge, and it was discovered that the trocar had passed through the abscess into an enormously distended stomach, thus establishing a gastro-vaginal fistula which persisted for three days after the prompt withdrawal of the canula, but no untoward results supervened and the patient recovered.—*Boston Med. and Surg. Jour.* 1886. June 3.

I. E. PILCHER (U. S. Army).

SZYMANOWSKI'S OPERATION AS APPLIED TO
THE CURE OF URETHRO-PERINEAL
FISTULA.¹

By CHARLES McBURNEY, M.D.,

OF NEW YORK.

SURGEON TO ST. LUKE'S AND BELLEVUE HOSPITALS.

MR. PRESIDENT: I venture to bring the subject of this paper before the society because I am convinced by experience that the operation which I shall describe is an exceedingly good one, and, although an account of it was published by its original designer as much as sixteen years ago, it has received but little attention from subsequent writers.

Persistent urinary fistulæ in the perinæum are not rare, occurring as the result of wounds of the perinæum, abscess and infiltration of the urine due to stricture or rupture of the urethra, and sometimes remaining after ordinary external urethrotomy, or median lithotomy. The immediate cause of such fistulæ as I shall refer to is almost always perineal section done by the surgeon for one reason or another. When urethro-perineal abscess has run its course without surgical interference, numerous fistulous tracts frequently remain, the case being usually complicated by stricture. For the relief of this condition no method is more popular than a median incision into the urethra, urine and pus then passing freely through the large recent wound, the irregular and outlying fistulæ usually closing rapidly. It is true that the complete removal of stricture of the urethra at all points anterior to the

¹Read before the New York Surgical Society, October 11, 1886.

fistula, the systematic use of large sounds, the correction of defects in the condition of the bladder and urine, and the application of the actual cautery or caustics to the granulating edges of these unnatural openings, will often succeed in obtaining their closure. When little or no loss of tissue has occurred, the tendency to spontaneous cure is very great, as is noticed so often when external urethotomy has been performed for the relief of uncomplicated stricture. And yet there remain certain cases, chiefly those in which considerable loss of substance has occurred, which are not benefited by any of the measures just referred to. For these cases a systematic operative procedure is required. In 1870, in his "Hand-book of Operative Surgery," Julius von Szymanowski described an operation for closure of fistula situated in that part of the urethra anterior to the scrotum. This operation was, as, Szymanowski himself states, suggested to him by a somewhat similar operation already done by von Langenbeck, and is thus described: In the case of a fistula lying in the long axis of the penis, a straight incision is first made, beginning a short distance in front of and ending a short distance behind the fistula. The skin on one side of the fistula is then undermined with the knife, and made easily movable. A half-oval flap of skin on the other side of the fistula is then cut, freed from the epidermis, and dissected up, except at the edge of the fistula. The dissected flap is then to be inverted, pushed under the already lifted skin on the opposite side, held in place by sutures passed through the bottom of the pocket, and the movable skin drawn over it and also sutured. To provide for urination, Szymanowski recommends that an elastic catheter be passed into the bladder and tied. Szymanowski does not state in his book that he ever did this operation. In 1874 Dr. Robert F. Weir closed by this method a very obstinate ante-scrotal fistula in a patient at St. Luke's Hospital. This case is described in detail in a paper by Dr. Weir, published in the first April number of the "Medical Record" for 1878. Modifications of this method were also made use of by me in a number of cases of ante-scrotal fistula. Some of these were published in the July number of the "Illustrated Quarterly

of Medicine and Surgery" for 1882, and others I have reported at meetings of this society since then.

The patient already referred to as operated upon by Dr. Weir had also an obstinate perineal fistula. He left the hospital with his ante-scrotal fistula soundly healed, and returned during the service of Dr. T. T. Sabine. Dr. Sabine applied Szymanowski's operation to the perinæum, and succeeded in closing the opening. I saw Dr. Sabine's operation performed and determined to make use of the method in a similar case.

CASE I.—My first case was that of Thomas Hills, æt. 28, who was admitted to St. Luke's Hospital on June 19, 1876. He had a large old perineal fistula. The operation was done on July 28th, and will be presently described. At that time I believed that the only method of completely preventing the passage of urine over the seat of operation was the introduction of a canula or catheter into the bladder *per rectum*, and maintaining the same *in situ* for some days after the operation. This method I have since found to be entirely unnecessary. In the case of Hills the catheter was introduced, but at the end of a few hours became clogged and caused such intense irritation that it had to be withdrawn, and, the bladder soon after emptying itself violently by the urethra, a large amount of urine was forced through the wound. This accident, and probably also my lack of experience in the details of the operation, brought about a complete failure. This patient left the hospital before I had another opportunity to operate upon him.

Five other cases have come under my care since that time, these six being all the cases of urethro-perineal fistula in which I have operated from June, 1886, to the present time.

CASE II.—John Jurgens, æt. 36, a German, was admitted to St. Luke's Hospital, February 2, 1882. Perineal cystotomy had been performed upon him in another hospital in August, 1881. For the closure of his large perineal opening I operated by Szymanowski's method on August 25. On September 2 an involuntary evacuation of the bladder forced a few drops of urine between the flaps. The same accident happened two or three times afterward, and the wound was not pronounced to be soundly healed throughout till the end of November. He was then well, and a French sound No. 29 passed easily into the bladder.

CASE III.—M. H. Gallagher, æt. 28, an American, was admitted to the St. Luke's Hospital, April 26, 1884. He gave a history of perineal abscess and fistulæ of six months' standing. For the relief of stricture, external urethrotomy was done upon this patient by Dr. Little on May 1. The perineal wound refused to close, although treated by numerous non-operative methods. The urethra admitted a No. 32 French sound readily. On July 18 I did Szymanowski's operation, and on August 4, seventeen days afterward, the parts were completely healed.

CASE IV.—William Purtle, æt. 39, an Irishman, was admitted to Bellevue Hospital on September 17, 1884. Six days prior to admission the patient fell astride a beam and ruptured the urethra. Infiltration of urine and abscess followed. Perineal section was performed on the day of admission. The wound did not completely close, and the patient came under my care in October. On November 6, anterior strictures were divided until No. 32 could be readily passed. Various non-operative methods were adopted to induce closure of the fistula without success, so that, on December 18, I did Szymanowski's operation. Thirteen days after the operation the wound was completely healed.

CASE V.—John Gifford, æt. 47, an American, was admitted to Bellevue Hospital on January 8, 1885. On admission he had extensive infiltration of urine due to stricture. Perineal section was done at once, several other incisions being required. At a subsequent period, March 4, all strictures were divided by internal urethrotomy until a No. 32 French sound could be easily passed. In spite of every care, the perineal wound refused to close, and I operated for that reason on May 18.

June 6, nineteen days after the operation, the wound was firmly healed.

CASE VI.—J. R. Horne, æt. 45, an Englishman, was admitted to St. Luke's Hospital on November 5, 1885. This patient had had external urethrotomy performed on him for the relief of stricture in 1877. A perineal abscess formed in 1884. His fistula reopened in June, 1885, and did not again close. External and internal urethrotomy were performed upon him in November, 1885, and in January, 1885, a Szymanowski's operation was done for the closure of the perineal opening. This operation did not succeed, probably on account of cystitis due to a calculus which I detected when the patient came under my care in February last. This calculus I crushed and removed

through the perineal opening. The cystitis being much reduced and the calibre of the urethra having been restored to No. 32 French, I did Szymanowski's operation on June 5. No accident happened, and on July 9, thirty-four days later, the wound was soundly healed.

One case, the first, owing to imperfect management, failed completely. Five cases succeeded, and in none of them was any second operation required.

The second case required three months and six days to obtain sound healing; the third, seventeen days; the fourth, thirteen days; the fifth, nineteen days, and the sixth, thirty-four days. No symptom of the slightest importance occurred in any of the last five cases, and the length of time occupied in recovery certainly compares very favorably with that often spent in futile and even successful attempts to close perineal fistula without operation.

The plan adopted in all of these cases was as follows, and, if the description seems tedious, my excuse must be that I believe the success of the operation to depend largely upon a close attention to details:

Some time previous to operation the entire urethra was cleared of all evidence of stricture, and the urethra accustomed to the passage of sounds; any sinuses in the neighborhood of the fistula were opened and soundly healed. If cystitis existed, it was removed as far as possible, although a moderate amount of chronic cystitis certainly does not contra-indicate the operation.

The day before operation the bowels and rectum were thoroughly cleared in order, especially, that for several days after the rectum and adjacent parts might be kept perfectly quiet by a free use of opium. The perinæum was then shaved and perfectly cleansed, and the bladder emptied with the catheter and thoroughly washed out with a weak solution of either borax or carbolic acid. The edges of the fistula were then either scraped or cut so as to remove all suppurating granulations which would naturally increase discharge and prevent early union.

A single straight incision was then made, from A, three-quarters of an inch in front of, to B, three-quarters of an inch behind the fistula (Fig. 1). This incision passed through skin and superficial fascia, and closely skirted the right side of the fistula. The edge of this incision was raised, and, working with a small blade to the patient's right side, the skin and fascia were undermined until a pocket was formed including the area A C B F, the right edge of the pocket being indicated by the dotted line A C B.

On the opposite side, a curved incision A D B was then made, the greatest width of the flap thus marked out being three-quarters of an inch to one inch.

This flap must be generous and should include a good padding of fascia, as, when it is lifted, the shrinkage is great.

Before lifting the flap a thin layer of skin was removed from its surface. This is best done with a small curved scissors, the superficial layer of skin being rapidly chipped off.

The freshening process was carefully extended over the entire area A D B F, excepting over a surface a little larger than the fistula, and immediately next to it.

It was thought best to leave this portion undenuded for the immediate cover to the fistula, because less cicatricial repair would occur, and less pus would be formed than if a raw surface were presented to the urethra (see Fig. 2). The flap A D B was then dissected up close

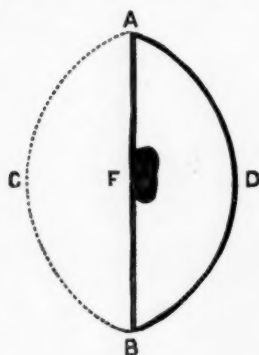


FIG. 1.

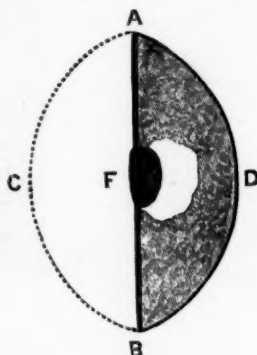


FIG. 2.

to the median line, and inverted, its attached edge acting as a hinge and as a medium for blood-supply.

Five or six fine catgut sutures were passed through the skin at different points a little beyond the dotted line, A C B, into the pocket, then through the free edge of the flap, and then back into the pocket and out through the skin. Five or six loops were thus formed, by drawing upon which the flap was closely drawn down to the bottom of the pocket, and the free ends of the loops were tied¹. (See Fig. 3). Two or three sutures of catgut were now passed with a curved needle through the upper surface of the inverted flap so as to firmly bind it to the parts beneath. Sometimes with interrupted and sometimes with a continuous catgut suture the free edge A F B, was now securely fastened to the edge A D B.² (See Fig. 4). Irrigation with

¹In the first two cases silk was used, and, I think, interfered with healing.

²The line of suture was thus removed to a distance from the fistula, large raw surfaces were brought in contact, and two thick layers covered the fistula.

carbolic acid or bichloride solution was used throughout, excepting in the first case.

The dressing consisted of iodoform, iodoform gauze, and a cotton pad, held in place with a T-bandage. A morphine suppository was usually introduced before the dressing.

The subsequent treatment consisted in a free use of opium to prevent the rectum from acting, and the use of the soft catheter, the latter at least every six hours and as much oftener as was required. Sometimes the catheter would be required as frequently as every three hours, and sometimes it caused moderate urethritis.

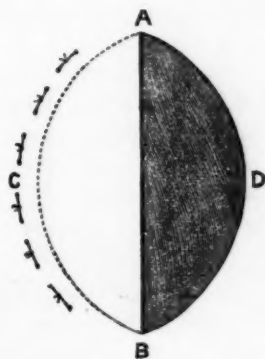


FIG. 3.

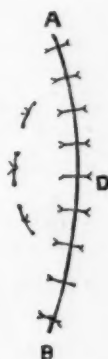


FIG. 4.

The catheter was always, excepting in the first case, thus used: It was introduced and the water drawn off. The bladder was then gently washed out with a weak solution of either carbolic acid or borax; I prefer the latter. On withdrawing the instrument, the end was tightly pinched until the whole catheter had been removed from the urethra. This plan seemed to reduce the chance of contaminating the wound with urine from the inside to a minimum, and is certainly much to be preferred to the practice recommended by Szymanowski of tying in a catheter, or that made use of by me in my first case of puncturing the bladder through the rectum.

A SECOND CASE OF RECOVERY FROM PERFOR-
ATING GUNSHOT WOUND OF THE ABDO-
MEN THROUGH LAPAROTOMY.¹

By WILLIAM T. BULL, M. D.,

OF NEW YORK.

SURGEON TO THE NEW YORK, AND CHAMBERS STREET HOSPITALS:

Daniel Mahoney, æt. 25, sailor, was brought to the Chambers Street Hospital in a cab, August 12th, 1886, at 7:40 P. M. He came first to the reception room without assistance, complaining only of pain in the abdomen while walking. Twenty minutes before, in a friendly scuffle, he had been shot with a pistol of 38 calibre. He was slightly pale and was perspiring freely, and since the injury had felt some nausea but had not vomited.

The axillary temperature was 97°, P. 96 full, R. 26. The abdomen was normal to sight and touch, but for the presence of a bullet wound two inches below and two inches to the left of the umbilicus, in the vicinity of which there was tenderness on pressure. The skin about the wound was normal, the edges were blackened and the lumen occupied by a dried clot of blood. The trowsers, just below the waist-band, and two shirts were found to be pierced by the bullet, no trace of which could be found inside the skin of the trunk. The urine was drawn. It was free from blood. Rectal examination was negative. After washing the skin thoroughly, the wound was covered with a compress of iodoform gauze and absorbent cotton and gr. $\frac{1}{8}$ morphine administered hypodermically. The man had always been in good health, drank only occasionally and was of excellent physique. The dangerous character of the wound was explained to him, and he consented at once to an operation. Two hours later his condition was as follows: P. 104, R. 24, T. 98. No pain, slight rectal tenesmus, abdomen unchanged.

A probe could not be introduced beyond the muscular layer. He-

¹ Reported at the meeting of the New York Surgical Society, October 11, 1886
For report of Dr Bull's first case, see ANNALS OF SURGERY, 1885, Vol. 1, p.479

patic dullness normal. No emphysema about the wound. He had made an ante-mortem statement to the coroner and had been visited by several friends.

At 9:40 P. M. ether was administered by Dr. Tiernan, and the operation was begun fifteen minutes later. The wound was explored by an incision 3 inches long and found to pass directly backward through the rectus muscle. The incision was then made in the median line from the umbilicus to the pubes. Coils of small intestine came at once into view. They were bathed in odorless bloody serum, several ounces of which escaped from the cavity. As the general condition did not indicate any serious hemorrhage, I proceeded to examine the intestine without waiting to sponge out the cavity. About half the length of the small intestine was drawn out, rapidly sponged, inspected and placed under warm towels, before a wound was discovered. Then a loop was met with through which the ball had evidently

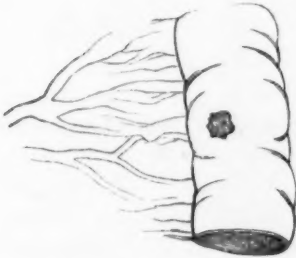


FIG. 1. FIRST PERFORATING WOUND
OF SMALL INTESTINE.
(Entrance.)

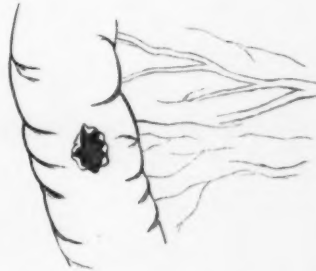


FIG. 2. SECOND WOUND OF SMALL IN-
TESTINE.
(Exit). Opposite No. 1.

passed. The wound on one side was evidently that of entrance (Fig. 1). It was as large as the top of a lead pencil, its edges adhering without prolapse of the mucous membrane. The other directly opposite, and midway between the free and attached border of the gut, was twice as large with a little fold of mucous membrane occupying its lumen. (Fig. 2). There was no escape of feces. The gut was held up by an assistant, a sponge placed beneath each wound, and the abdominal incision protected by a large flat sponge, while the sutures were inserted after Lembert's method. The finest iron dyed silk was employed.

Three sutures sufficed for the first, and six for the second wound. Iodoform was rubbed along the line of suture. Several more feet

of small intestine were examined without finding any other sign of injury than half a dozen subperitoneal extravasations of blood no greater in area than a pea. The mesentery was dotted with smaller extravasations. There was no decided congestion of the gut nor any lymph exudation on its surface. The pelvis was then occupied by one or two coils of small intestine and the sigmoid flexure, while the cæcum projected from the right side partly obscured by the small intestine. To examine the rest of the gut, I removed, with the hand and sponges, at least two tumblertuls of clotted blood. It was then evident there was a hemorrhage from some vessel deep in the pelvis. It was not very active, for the pressure of a large sponge controlled it. All the small intestine that could be drawn out was then held under towels outside the wound, and the sigmoid flexure also exposed to



FIG. 3. THIRD WOUND; OF SIGMOID FLEXURE. (Penetration uncertain.)

view. A longitudinal wound, $\frac{1}{2}$ an inch in length, was met with close to the attached border. The muscular coat was bared, but no mucous membrane was seen, (Fig. 3.) The wound was closed with four sutures. The cæcum was now pushed out of the way and a view obtained of the sigmoid mesocolon, and the source of the bleeding discovered to be a circular wound near to its attachment to the middle line, and fully three inches from the edge of the gut, (Fig. 4.) When the mesocolon was made tense by traction on the flexure the bleeding ceased; when relaxed a stream of venous blood issued from the wound so copiously as to fill the cavity of the pelvis one-third full several times before it was controlled. Pressure below the wound stopped it, but the vessel from which the blood issued could not be seen, even after the wound was enlarged with scissors; The tissues on the lower

edge, when pressure was effective, were finally grasped in a large "bite" with long artery clamps, a silk ligature, passed by means of a curved needle, under the blade of the forceps and tied as the forceps were withdrawn. This controlled the bleeding. Above and to the inner side of the wound there was an extravasation of blood which, as it was firmly clotted, was not interfered with. Another wound of the mesocolon stripping off its peritoneal coat over an area as large as a quarter was found close by, (Fig. 4.) This and the preceding one was

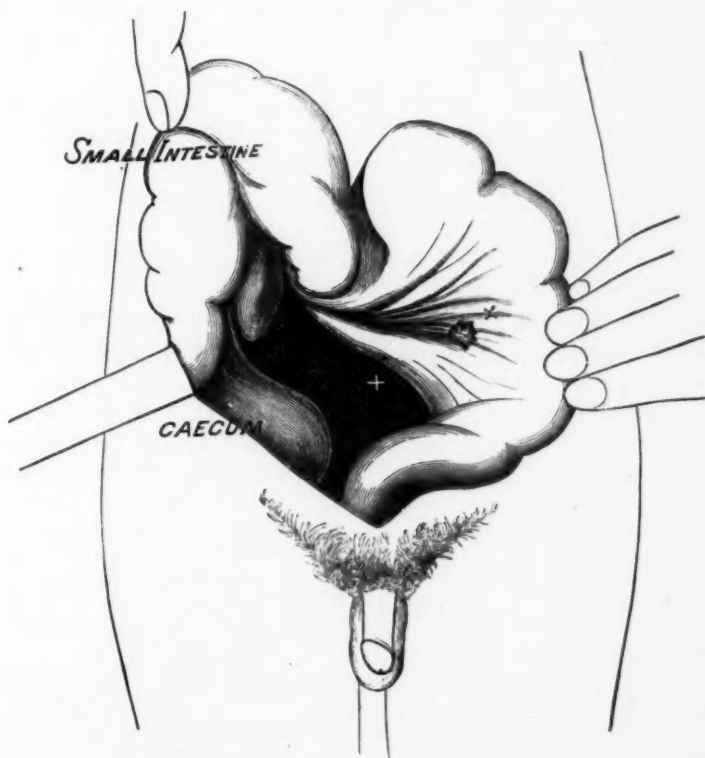


FIG. 4. THE TWO WOUNDS OF THE MESOCOLON. (The superficial one involved the peritoneum only; the deeper one, +, was the source of the hemorrhage.)

not sutured, but rubbed thoroughly with iodoform. One of the appendices epiploicæ was found torn and bleeding at its extremity. It was tied at the base with catgut and cut off. Considerable blood had

been observed to come into the pelvis from the region of the cœcum during the efforts to stop the hemorrhage already referred to, but on careful sponging there was found no fresh source of bleeding. A sponge in the grasp of a long forceps was passed into both the lumbar and epigastric regions and brought out perfectly clean. The omentum had not been seen up to this time, but the sponge drew it out from the left lumbar region and its extremity being found lacerated, but not bleeding, was tied to the extent of 3 inches and cut off. The rectum was again examined with the finger, and the bullet not being found there, I concluded it was lodged in the extravasated blood in the mesocolon, and decided not to search for it further. Several pints of warm carbolic acid solution (about 1 to 100) were poured from a pitcher into the pelvis and sponged out, and the intestines, as they were replaced, freely washed with the same solution. The abdominal wound was sutured with silver wire and silk sutures passing through all the layers, and with superficial catgut sutures. A continuous catgut suture was applied to the peritoneum. Iodoform gauze covered the line of suture, and over this a compress of carbolized gauze with a metallic coil (Leiter's), held in place by a binder. The incision into the bullet wound was stuffed lightly with iodoform gauze. The duration of the operation was 1 hour and 50 minutes. The intestines were held outside the cavity just one hour; and thirty minutes were spent in applying the sutures. Ether was given for 2 hours and 10 minutes. The pulse at the end of the first hour was 116; at the close of the operation 128, and of fair volume. The extremities were cold, but respiration was satisfactory. Four subcutaneous injections each of whiskey 3j and tinct. digitalis $\mathfrak{m}\text{x}$ were given in the last hour.

I was fortunate in having the advice of Professor J. D. Bryant, who agreed with me as to the propriety of the operation; and the assistance of Dr. C. H. Wilkin, Dr. B. F. Curtis, and Dr. Garrison; Dr. Parke, Dr. Tiernan, and Dr. Bryant, of the house staff; Dr. Robert Eustice, and Dr. John P. Adams, also rendered valuable help. The room was not specially prepared for the operation; it is used for out patients during the day. But in other respects the utmost attention was given to antiseptic details. The sponges were taken from a 5 per cent. solution of carbolic acid, in which they had been lying for two months, and rinsed in warm $2\frac{1}{2}$ per cent. solution. During the operation they were washed in a much weaker, about 1 to 100, and the silk employed I boiled myself in a 5 per cent. solution for half an hour previous to the operation. The towels employed were old ones which had been washed in $2\frac{1}{2}$ per cent. solution, and were kept warm with a heater.

After history of the case.—August 14th, 10 A. M., P. 108, R. 34, T. 100. Thirty-six hours after operation. Reaction was prompt, and ice water was run through the coil twelve hours later, and is now continued. Magendie's solution ℥xxxii, had been given subcutaneously in 5 injections. Ice by the mouth; and by rectum 5 enemata of beef peptonoids ℥ij gr. and whiskey ℥ss. During the last 12 hours he had been allowed champagne ℥ij, or milk and lime water ℥ij every 2 hours. He has dozed most of the time, complained of a little pain. There is slight tympanites. He is troubled with occasional cough, with slight

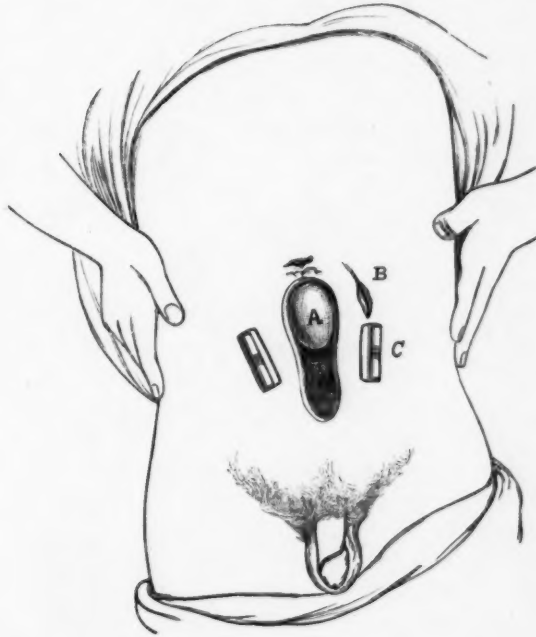


FIG. 5. APPEARANCE OF THE WOUND ON THE EIGHTH DAY. A. Protruding intestine; B. Point of original wound; C. Silver wire relaxation suture secured by pieces of wood.

mucous expectoration. Urine drawn by catheter has amounted to ℥xx. It is high colored and contains urates, but no albumen; Sp. gr. 1020. 10 P. M., P. 98, R. 26, T. 100. Tongue is moist, and there has been no nausea.

August 17th. Fifth day, 9 A. M., P. 80, R. 24, T. 101°. Up to this time the progress of the patient has been uneventful

There has been slight pain and tympanitis, no nausea or vomiting. Liquid diet has been given, and occasional doses of morphia hypodermically. The cold water coil has been continued, though the temperature has not been over $100\frac{1}{2}^{\circ}$, nor the pulse over 100. A copious normal, but soft fecal evacuation took place after an enema. A purulent collection in the wound made itself evident by discharge about the sutures. The line of union which was firm was broken down, and a thin layer of pus found at the bottom in the extraperitoneal tissue, but in the upper half of the wound the peritoneum along the line of suture was sloughing, and on parting its edges a portion of intestine was visible, firmly adherent to the parietes. I mopped it with $2\frac{1}{2}$ per cent. carbolic acid and stuffed lightly with iodoform gauze. The pulse, respiration and temperature were normal after this.

August 18th. Sixth day. While coughing in the night a piece of gut protruded from the upper third of wound, but did not overlap the skin. Its surface was coated with grayish lymph with granulations in places. The wound was 5 inches long and 2 inches wide.

The edges were held together with two "relaxation sutures" of silver wire, and compression made on the intestine with a small pad of iodoform gauze and wood. By means of these, the gut was pushed back from day to day while the edges were being drawn together, and the lower part of the wound was filling with granulations. On the ninth day solid food was allowed. On the eighteenth day the intestine was on a level with the wound, the whole surface ($3\frac{3}{4}$ inches long and $\frac{5}{8}$ wide) was granulating finely. Skin grafts were put in several times. Balsam of Peru replaced the iodoform, and at the end of eight weeks the cicatrization was complete. It is now only a week that he has been out of bed.

With the report of the case, the patient was presented for the inspection of the members of the Society.

TWO CASES OF LAPAROTOMY FOR PERFORATING GUNSHOT WOUND OF ABDOMEN WITH FATAL TERMINATION.¹

CASE I.—*Gunshot wound of abdomen; Four intestinal perforations, and one of bladder; Laparotomy and suturing six hours later; Death nine hours after Laparotomy.*—BY DR. ROBERT ABBE, (New York).

George Hill, æt. 53, gentleman—large physique and very fat—after rising on the morning of July 8th, 1886, emptied his bladder and dressed. Very soon afterwards, while drawing some articles from a low cupboard shelf, while bending over drew a small revolver toward him, which discharged at the shelf level, and emptied itself into his belly. Walked to another room, and then a distance of two blocks. Was brought to St. Luke's Hospital at 11:30 A. M., and seen by me at 12 o'clock. He was then suffering from shock to slight extent, as shown by pallid mucous membranes (tongue, etc.,) despondency and dulled intellect. Yet pulse was excellent at 82. Had vomited once when given some brandy directly after accident. Was not specially restless. Complained of rapidly increasing pain over the belly, principally from the navel upward toward left hypochondrium. Tympanites not marked, but belly had a full feeling. The area about the navel had a resisting feeling not observed elsewhere, and was dull on percussion.

A small bullet wound was seen exactly in the median line, three inches above the pubes. Probe passed through it at right angles to the surface. His urine was drawn to see whether the bladder had been perforated, and eight ounces of clear, bloodless urine were drawn by a soft catheter.

Operation: 2 30 P. M. Ether. Pulse under 90, firm, good quality, condition only changed from 2 hours before by increasing deep and vague abdominal pain. Tympanites beginning to show, and central abdominal fulness, duller median.

Median incision from 2 inches below umbilicus to near pubes. Cut-

¹Reported at the meeting of the New York Surgical Society, December 11th, 1886

ting through, an inflamed peritoneum lined with lymph was found. Opened up an encysted collection (amounting to about a pint) of greenish watery fluid, somewhat muddy with lymph flakes and feces. It was confined against the abdominal wall anteriorly with the matted intestines which were already coated with a thick layer of lymph, where exposed to the fluid, which, as it accumulated, was forcing them away, and enlarging the sac containing it. The fluid came from a coil of small intestines centrally placed, showing two perforations, one near its attached border, the other opposite the mesenteric side. The latter discharged freely the same greenish watery fluid as was in the sac. Each inspiration pumping it out in copious jets. The perforation close to the mesentery had its mucous coat everted, and was thus seemingly plugged up. The fluid was perfectly confined by the lymph barrier on all sides. After sponging this cavity, the wounds of the gut were readily and thoroughly closed by Lembert's suture. No other coils were injured in this space. The intestines were now gently parted, and it was readily demonstrated that there was no general peritonitis, for the portion of each coil facing the inflamed sac was red and heavily coated with lymph, while the free sides were uninfamed and retained their luster. Another piece of small intestine, wounded by a double perforation from side to side, was found somewhat below the large collection of fluid just described. It also was isolated by excellent plastic adhesions between neighboring coils, and contained a small amount of feculent inflammatory fluid. The involved parts were cleaned and these two perforations were sutured. No other wounds being seen, a rapid and careful survey of the intestines from duodenum to colon was made. The bowel was passed from the fingers of one hand to those of the other, mostly within the abdominal cavity. Warm sponges from sublimate solution, enveloped any coils that escaped at once. There was no further injury of the bowel. A final inspection of the pelvis showed a perforation of the peritoneum between the bladder and rectum, which in this subject was underlaid by fat an inch thick. The wound was small and not inflamed. It was evident no urine or feces had escaped to set up irritation. A probe passed down and backward an inch or so, but gave no further clue to the direction of the bullet. It seemed probable that the missile had over shot the bladder and presumably traversing the rectum imbedded itself in the sacrum. There had been no bleeding into the peritoneal cavity, and the loops of intestine drawn from the pelvis were free from all signs of inflammation. The fifth wound was sutured, and the peritoneal cavity sponged out with care, Dr. McBurney assisting. Sponges were thrust down into the pelvis

and about the kidneys, but returned quite as dry as when introduced, showing that no fluid had leaked in during the operation. The pelvis was drained by a Thomas' glass tube emerging at the lower end of the wound, which was otherwise treated as usual. Before leaving the table a soft catheter was introduced into the bladder and two or three ounces of clear urine drawn. The wound suggested a small bullet, No. 22.

Subsequent History.—The patient did not come out from ether well, but remained in a somnolent condition, his breathing being characteristic of pulmonary oedema. He was restless and had to be tied in bed. Pulse intermittent and not strong. A catheter being passed at 7 o'clock, no urine was found in bladder. He was freely stimulated with whiskey and digitalis, and heart's action greatly improved. A cold water coil was placed over abdomen.

At 11 P. M. his pulse could scarcely be felt at the wrist, though it had been fairly good a few moments before. Prompt stimulation brought it up, yet soon afterwards he was taken with a short convulsive attack, tossing about the bed and throwing arms about. He suddenly ceased breathing. Artificial respiration was immediately begun, and an enema of brandy given which was not retained. He died at 11:15 P. M.

From the time of the operation, as I watched him from hour to hour, he seemed to be laboring under the strain of pulmonary oedema, breathing oppressively with more and more coarse râles and labored shallow inspiration. This, with semicoma and suppression, (which latter was complete after operation) and finally a fatal convulsion, which I saw, led me to assign uræmia as the real cause of death.

Autopsy.—July 9th, 11:30 A. M.

Inspection.—The body is well nourished, rigor mortis well marked, no oedema. Veins of legs very varicose. There is an incision in the median line of abdomen extending from a point 1 inch below the umbilicus to over the symphysis pubis extending from lower end of incision is a large drainage tube. The wound is united by numerous sutures about $\frac{1}{4}$ inch apart, and by four metal sutures $1\frac{1}{4}$ inches apart. Peritoneum is intensely hyperæmic and contains recently exuded lymph. The peritoneal cavity contains twelve ounces of purulent fluid. Intestines.—There are two wounds in the lower portion of the jejunum opposite to each other, and carefully sutured; about 7 feet above these two wounds are two other wounds opposite to each other and carefully sutured. The intestines are not elsewhere wounded. The mucous membrane is intensely congested; the mucous membrane

of the large intestine is deeply pigmented. Ball was found in basin when intestine was cleaned.

Kidneys are normal in size. They seem to contain some fat in the cortices and are moderately hyperæmic.

Stomach is normal.

Spleen is a trifle large and soft in consistency.

Bladder.—There is a penetrating wound in the roof of the bladder which is carefully sutured. An incision two inches in length was made in the roof of the organ to the left of the wound and showed the bladder to contain about an ounce of muddy colored urine. The organ was then carefully removed and slit up through the anterior wall, through the prostatic urethra, and an area $\frac{1}{2}$ inch in diameter of intense hyperæmia was seen at the outlet of the right ureter.

Liver contains very considerable fat and a slight increase of fibrous tissue.

Heart.—Cavities are dilated; the valves are competent. The aortic and mitral valves are moderately thickened.

Microscopic Examination.—Heart. The muscular fibre of the heart is seen to be granular; the transverse striæ are obliterated very generally. There are free globules seen in the cell fibres. The interstitial fat is also increased.

Kidneys.—Hyperæmic; some atrophied glomeruli.

Very slight increase in the fibrous tissue epithelium in convoluted tubes; granular and in places fatty.

Liver.—There is considerable fat in the liver and moderate increase in its fibrous tissue.

Remarks.—Regarding the note by the pathologist, that 12 ounces of fluid were found in the cavity of the abdomen, I would note two important points. *First.* It was like peritoneal secretion in severe acute peritonitis, but had a shade of greenish color about it that suggested to me the possibility that I had left some fluid as a cause for part of this, and that it had lurked in the loins or between folds of intestine not reached by sponging. *Second.*—The fluid was found in the lumbar region of the abdomen at the autopsy, and my sponging certainly swept into this section before closing the abdomen.

The bullet was lodged in the bladder all the time, and was not discovered by using soft catheters. The point of impact on the posterior bladder wall was bruised but not lacerated.

CASE 2.—*Gunshot wound of abdomen: Perforation of liver, with progressive hæmorrhage: Laparotomy, operation inter-*

rupted by death of the patient. By Dr. W. T. BULL (New York).

A clerk, æt. 57, of intemperate habits, shot himself in the abdomen with a pistol of 32 calibre about 9 A. M. on January 10, 1885, and was brought to the Chambers Street Hospital by ambulance two hours later. On admission he was suffering from shock and loss of blood; the surface of body and extremities was cold and very pale; the pulse 100 and feeble, R. 25 and T. 94° (axillary).

He was rational but dull; had vomited once the contents of the stomach, and had little or no pain. In the epigastric region was the entrance wound of the bullet, 3 inches above the umbilicus and 1 $\frac{3}{4}$ inches to the left of the median line. The wound of exit was on the right side in the axillary line, midway between the ribs and crest of ilium. There was no bleeding from either wound. Urine drawn was normal in appearance. Four hours later, notwithstanding every effort, his condition was worse. P. (temporal) 134, R. 28, T. 97°. Seven hundred and fifty c. c. of a saline solution was infused into the cephalic vein in the course of 12 minutes. This was followed by improvement, and at the expiration of three hours, the radial pulse was 112 of fair volume, R. 24 T, 96 $\frac{1}{4}$ °. At 9:30 P. M., after consultation with Dr. Weir, I performed abdominal section. It was just seven and three-quarter hours after admission, and the general condition had undergone a decided change from that noted three hours after the infusion. From the situation of the two wounds and the evident signs of hæmorrhage I inferred that the liver had been wounded, and undertook the operation in the hope of arresting the bleeding.

The incision was made from an inch below the ensiform cartilage to three inches above the pubes, and showed at once that the bullet had entered the left lobe of the liver cutting it nearly in two (transversely). The intestines were floating in bloody serum and clots; a few loops of uninjured intestine were drawn out in order to expose the right lobe of the liver and the blood rapidly sponged out, but it welled up from beneath the liver as fast as it was removed. The pulse began to fail after the abdomen was opened, and before the cavity had been cleared so as to allow a satisfactory inspection the patient expired just half an hour from the time the administration of ether was begun. There were no other visceral wounds. The bullet had traversed the left lobe as described, passed through the round ligament, the lower edge of the right lobe and the abdominal wall. The vessels in the transverse fissure escaped injury.

THE RESULTS OF ANTISEPTIC METHODS IN THE
TREATMENT OF WOUNDS, AS SHOWN
IN A SERIES OF 100 CONSEC-
UTIVE OPERATIONS.

By ROBERT T. MORRIS, M. D.,

OF NEW YORK.

The operations are not described in the order in which they were performed, for the reason that a classification of the cases allows of so much more comfort on the part of the reader.

In speaking of this as a list of consecutive cases, it is necessary to state that a few trifling operative procedures, which were sandwiched in with my other work and which are hardly worthy of the name of operation, have been excluded from the table.

The cases thus excluded are: One of subacute pleurisy; paracentesis thoracis; removal of 5 pints of fluid; recovery.

One of ascites; paracentesis abdominis a number of times; removal of 30 or 40 pints of fluid at each tapping; recovery from each tapping.

One of hydrocele; paracentesis scroti; removal of a few ounces of fluid, and injection of a few drachms of tincture of iodine; recovering when last seen.

Two of hydrocephalus; paracentesis capitis; removal of several drachms of fluid, and injection of several minims of Morton's fluid. Practical recovery of one case as a result of treatment; death of the other patient as a result of tonic muscular spasm, which was not relieved by the treatment.

One of crushed finger tip; skin and bone trimmed; primary union.

A number of constrictions of the meatus in cases of gleet; meatus incised; healing by granulation.

A number of small abscesses; incision; granulation or primary union.

The antiseptic method employed was the one which within

a few years has come to be the most popular one among civilized people, and which I chose after experimentation with other methods, the details being as follows :

Instruments were scrupulously cleaned after every operation, and were often dipped into boiling water before use in "dangerous" cases. As a rule the instruments were placed in an 1-30 carbolic acid solution fifteen or twenty minutes before ether was administered to the patient; and they were returned to the solution from time to time as work was proceeded with. An exception to the rule was made in eye cases; and alcohol was used in place of the carbolic acid solution. Towels wrung out of 1-1000 bichloride of mercury solution were placed on the table and about the patient in such a way that instruments when not in use would be dropped on antiseptic surfaces only.

Materials.—Sutures were of catgut, silk worm gut, silk or silver wire. The silk sutures were used only for ligating hæmorrhoids (or for conjunctival wounds), and were prepared by soaking in 1-2000 bichloride solution for one or more days. Silk-worm gut and silver wire were used for suturing bony surfaces together, and for supporting heavy, soft tissues, (used as shot-and-button sutures in the latter case. The catgut sutures, which were employed in the greater part of the work, were prepared according to Kocher's method,¹ and when required for use were either taken directly from the alcohol or were first placed in one of the receptacles containing some other antiseptic fluid. Chromic cat-gut was used in some cases where continuous support for soft tissues for more than two weeks at a time was thought to be desirable.

Ligatures were always of cat-gut, prepared according to Kocher's method.

Drains for large wounds were of absorbable bone tubes, rubber tubes, or cat-gut strands. The rubber tubes were kept stored in 1-2000 bichloride solution, and were only used in the few cases where surrounding tissues would have pressed too tightly on bone tubes or cat-gut strands.

Lister's protective oiled silk, which had been stored in weak bichloride solution, was used to cover the line of sutures in a

¹Raw cat gut placed in oil of juniper for one or two days and then transferred to bottles of alcohol in which it remained until wanted for use.

wound, and to cover granulating surfaces. It prevented the disturbance of the wounds from the slight movements of the dressing which are almost continuous when a patient walks about, and it kept the vicinity of the wounds in a moderately moist condition, so that serum was not backed up by a too close drying of the dressing about the drainage orifices.

Bichloride gauze shaken up into a loose mass was placed next the wound in order to allow of easy percolation of serum. Sometimes carbolized gauze was used instead of the former.

Bichloride cotton was usually placed over the gauze, and it then formed the bulk of the dressing—this for economy's sake principally.

Iodoform was sprinkled over the wound, along the line of sutures, and over that portion of the gauze which lay near the wound, in order to lend accessory antiseptic help.

Bichloride of mercury was used as the sheet anchor of antiseptis. An 1-1000 solution was employed for preparing the towels, the hands of the surgeon and of his assistants, and the skin of the patient in the vicinity of the wound. The 1-2000 solution was commonly used for irrigating the wound from time to time during the course of an operation. An 1-5000 or 1-10000 solution was employed for the peritoneal cavity, and this solution was carefully removed with sponges when the operation was completed.

Carbolic acid solution was used as an irrigating solution in a few of the cases, but it certainly caused an excessive flow of serum, and was therefore seldom employed.

Preparations for Operation.—The skin in the region of a wound was regularly soaped and shaved, whether visible hairs and loose epithelium existed or not. The skin was then scrubbed with a nail brush and washed with 1-1000 bichloride solution. Sometimes ether was poured over the skin in cases where a penetrating antiseptic was required. The hands of all persons who were manually interested in the operation were first washed in soapsuds, and then carefully scrubbed with 1-1000 bichloride solution. Towels wrung out of 1-1000 solution were placed over the patient and about the table in such a way that hands, instruments and materials came in contact with antiseptic surfaces only.

Dressings usually remained unchanged for at least two weeks at a time. Sometimes, on very extensive wounds, they were left in place for four weeks or longer, and, sometimes, when they became very wet with serum, a day or two after the operation, it was deemed advisable to change the dressings under irrigation and apply dry ones in their stead. This latter procedure is rarely necessary, however, because the serum is heavily charged with antiseptics, and it cannot readily decompose. It dries in a day or two and then all goes on smoothly. (Exposed wounds—for instance, those made in the operation for hæmorrhoids—were simply kept under a coating of iodoform). When dressings on a large granulating wound are to be changed, the work must be done with the most careful attention to antiseptic details if the surgeon would avoid suppuration. It is possible to so manage a large granulating surface that no pus will be produced there, but in no other condition of things is more expert antiseptic work demanded.

Among the cases here reported, in which any granulating surface remained after the first change of dressing, a slight amount of suppuration was frequently allowed afterward, because the surfaces were not large, and it was not considered worth while to take the trouble required for entirely preventing the formation of pus. The first dressings, though, were regularly as sweet as new bread at the time of their removal, even when they had been in place during a month of hot weather; and it was the exception to find any sign of suppuration about the largest of the wounds at the first (which was often the last) change of dressing.

In the great majority of cases the temperature remained normal after a period of forty-eight hours after operation had elapsed. In some of the larger operative cases in which bone, synovial membrane or peritoneum were involved there was no notable rise of temperature during the first forty-eight hours, or at any subsequent period during the time of repair, (100° F. considered as notable).

The operations were done upon persons in almost every conceivable sort of physical condition, and often amidst the

most unfavorable surroundings. A large number of the patients were operated upon in towns situated at a distance from New York, and the cases were left entirely to the care of the physicians who had kindly invited me to do the work for them. Owing to the hearty co-operation of these gentlemen in carrying out the rules of antiseptic surgical practice, I have never had occasion to regret my course in consenting to do major operations at the homes of the patients.

In the subjoined list of cases the word "recovery" means, in general, that the natural condition was regained, rather than that life was saved by the operation. The word is here and there impressive beyond its intention, but in order to make the form of the report well outlined it was necessary to fill all spaces for cases according to a certain plan.

HEAD AND NECK.

No.	Name, Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
1	G.C., 21, F.	Fibro-sarcoma of sheath of left parotid gland.	Incision about 2 inches in length. Removal of tumor and tissues in contact with it.	Primary union.	Recovery.
2	F.W., 14, M.	Cysto-sarcoma attached to sheath of left parotid gland.	Incision about 2 inches in length. Removal of tumor and tissues in contact with it.	Primary union except at small drainage opening.	Recovery.
3	G.S., 70, M.	Lipoma of neck (nuchal region) and shoulder.	Incisions about 4 inches long and 2 inches long respectively.	Primary union.	Recovery.
4	S.M., 64, M.	Epithelioma of left cheek. Size of chestnut. Three week's growth.	Removal of tumor and skin in vicinity. Plastic operation. 3 inch flap from right arm.	Primary union at margins of transplanted piece, and of wound of arm.	Recovery after sloughing of 2-3 of transplanted piece. Recurrence in submaxillary lymphatics 5 months later.
5	D.M., 64, M.	Recurrent epithelioma in submaxillary lymphatics. Partial eversion of lower eyelid from cicatricial contraction.	Removal of diseased tissues, and ligation of facial artery. V. shaped incision to relieve lower eyelid.	Primary union.	Recovery (5 months elapsed).
6	C.60, M.	Epithelioma of lower lip. Lip almost entirely destroyed.	Removal of remains of lip, anterior portion of chin skin and portions of infected cheeks. Long incision out on cheeks and down on neck for flaps.	Primary union except at little crease near mouth in middle line.	Recovery from operation. (Death from recurrence in neck several months later.)
7	S.T., 40, M.	Lipoma of forehead.	Incision 1 1/2 inches long.	Primary union.	Recovery.
8	J.H., 20, M.	Cervical adenitis and hypertrophy of tonsil (left side)	Removal of glands. Tonsillotomy. Wound of neck left to granulate. Only partial closure possible.	Healthy granulations.	Recovery from operation. More adenitis later.
9	W., 36, M.	Cervical abscess. Broken down glands.	Incision. Wound left open.	Weak granulation.	Recovery from operation. More adenitis later.

HEAD AND NECK.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
10	S. E. 45. M.	Very large submaxillary abscess.	Incision. Contents washed out with antiseptic solution. Wound left open.	Healthy granulation.	Recovery.
11	T. McM 49, M.	No. 32 bullet wound or mastoid process of right temporal bone.	Cross shaped incisions. Chiseling of rough bone. Removal of bullet which lay on dura mater.	Primary union except at central portion. Had to plug there to stop oozing from diploe.	Recovery.
12	J. O. C. 46, M.	No. 22 bullet wound of squamous portion of right temporal bone.	Cross shaped incision. Chiseling of rough points of bone.	Primary union except at small central bruised portion.	Recovery.
13	M. 44.	No. 38 (?) bullet wound of skull. Bullet entered right squamous bone and passed transversely through skull, cracking skull at left frontal prominence.	Cross shaped incision. Both bone wounds trephined. Bullet extracted through drainage of brain.	No note as regards union.	Death from sudden uncontrollable secondary haemorrhage on following day.
14	—30, M.	Right side of frontal bone and right anterior lobe of brain crushed by horse kick.	Cross shaped incision about 3x4 inches in extent. Bone trephined and elevated. Large portions of bone and brain removed.	Primary union of skin except at small drainage opening. Marked temporary recovery.	Death 3 days later as result of original injury. Fracture of base of skull found at autopsy.
15	F. S. 27, M.*	Fracture of cervical vertebrae. (old.)	Incision about 7 inches long. Removal of laminae and spinous process of 7th and spinous process of 6th cervical vertebrae.	Primary union except at small drainage point.	Recovery from operation. Death 10 months later as result of original injury.
16	C. M. 70, F.	Senile cataract. (left).	Extraction of lens. Graefe upward.	Primary union.	Recovery.
17	—30. F.	Prolapse of crystalline lens, (left).	Extraction of lens. Downward corneal incision.	Primary union.	Recovery.

*Reported in ANNALS OF SURGERY.

ANTISEPTIC TREATMENT OF WOUNDS.

HEAD AND NECK.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult	Final Result.
18	P. L. 6, M.	Convergent strabis- mus.	Section of left in- ternal rectus ten- don.	Primary union.	Recovery.
19	F. B. 28, M.	Convergent strabis- mus.	Section of left in- ternal rectus ten- don.	Primary union.	Recovery from ope- ration. Not com- plete relief from squint.
20	A. M. 30, F.	Glass wound. Trans- verse laceration of outer half of right cornea and cor- responding por- tion of iris. Scle- rotic torn for one or two lines. Es- cape of pea-sized piece of vitreous humor.	Iridectomy.	Primary union of sclerotic and 2-3 of corneal wound.	Recovery.
21	M. H. 40, F.	Trichiasis.	Removal of ciliary line and narrow section of skin above.	Primary union ex- cept at little un- closed point.	Recovery after sec- ondary removal of two or three lash tubes which had been left pre- viously.
22	W. D. 24, M.	Loss of 1-6 of upper portion of helix of left ear.	Transplantation of flap from tempo- ral region.	Primary union of su- tured margins. Granulation of posterior exposed surface.	Recovery.
23	St. J. 35, F.	Cellulitis of whole inferior maxillary region.	Incision on inside of mouth. Evacu- ation of pus. Wounds left open.	Slow granulation.	Recovery.

TRUNK.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Result.	Final Result.
24	D. 38, F.	Tuberculosis (?) of right ovary	Laparotomy. Removal of right ovary and tube.	Primary union except three or four pin head sized points in skin.	Recovery from operation. Further development of general tuberculosis (?) at present.
25	T. 45, F.	Gall stones in abdominal cavity surrounded by tumor of fibrinous deposit.	Laparotomy. Incision from pubes nearly to sternum. Separation of matted intestines. Removal of gall stones and segment of abdominal wall. Cholecystectomy.	Primary union except at drainage opening, from cystic duct.	Recovery nearly complete'd. 3 weeks out of bed. Still under treatment. (6 weeks from operation) for unclosed, but rapidly closing biliary fistula.
26	B. 62, F.	Strangulated inguinal hernia. Right entero-epiplocele.	Incision of coverings and of margin of ring. Removal of large knob of epiploon. Intestine returned and canal closed with catgut.	Primary union except at small drainage opening.	Recovery from operation. Return of hernia about 1 yr. later as result of heavy lift. Truss now used easily.
27	W. 58, F.	Chronic peritonitis.	Laparotomy. Exploratory incision 5 inches long. (Patient very large and fat)	Primary union of deep parts of wound. Too early absorption of superficial catgut sutures and separation of skin and subcutaneous fat in incision line.	Recovery (25 days elapsed). Secondary union nearly complete 48 hours after approximation of granulating margins.
28	C.A. 18, F.	Puerperal peritonitis. Patient comatose and pulseless	Laparotomy. Peritoneal cavity washed out with very weak warm bichloride solution.	No note as regards union.	Death six hours later operation relieved markedly for two hours. Then came relapse and death.
29	G.P. 55, M.	Chronic pyelitis.	Nephrotomy. Exploratory incision along margin of left quadratus lumborum muscle. Subperitoneal. Kidney punctured with hypodermic needle.	Primary union except at small drainage opening.	Recovery. (3 weeks elapsed.)
30	J. R. 56, M.	Suppression of urine. Acute parenchymatous nephritis.	Exploratory aspiration of bladder through abdominal wall.	Primary union of needle openings.	Recovery.

TRUNK.

<i>No.</i>	<i>Name Age & Sex.</i>	<i>Case.</i>	<i>Operation.</i>	<i>Intermediate Re- sult.</i>	<i>Final Result.</i>
31	B. 56, F.	Scirrhus cancer of right breast.	Removal of breast, sheath of pectoralis major muscle. Axillary lymph-glands and vessels, and fat and loose connective tissue.	Primary union except at a few little pin-head sized spots.	Recovery (year elapsed.)
32	N. 37, F.	Encephaloid cancer of left breast.	Removal of breast, portions of pectoralis major muscle, axillary lymphatics and common connective tissue and fat. Subclavicular lymphatics removed.	Primary union of all opposed tissues. Central uncovered portion 2x1 inches granulating.	Recovering (still under treatment.)
33	U. 71, F.	Scirrhus cancer of right breast.	Removal of breast, sheath of pectoralis major muscle. Axillary lymphatics, fat and connective tissue. Subscapular connective tissue.	Primary union.	Recovery (10 weeks elapsed.)
34	E. B. 47,	Scirrhus cancer of left breast.	Removal of breast, portions of pectoralis major muscle, axillary lymphatics, fat and connective tissue. Subclavicular and subscapular lymphatics and connective tissue.	Primary union of all opposed tissues. Central uncovered portion 2x2 1-2 in. granulating.	Recovering. (Still under treatment.)
35	H. 41, F.	Scirrhus cancer of right breast.	Removal of breast, portions of pectoralis major muscle, axillary fat, lymphatics and connective tissue. Subclavicular lymphatics and connective tissue.	Primary union of all opposed tissues. Central uncovered portion 2x1 1-2 in. granulating.	Recovering. (Still under treatment.)
36	McB. 65, F.	Scirrhus cancer of left breast.	Removal of breast, portions of pect major muscle, axillary lymphatics, fat and connective tissues and subclavicular lymphatics.	Primary union of the long incision. Sloughing of one of the short axillary flaps.	Recovery. (Still under treatment.)

TRUNK.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Result.	Final Result.
37	P. 45, F.	Lipoma of left suprascapula region. Size of fist.	Removal through single long incision.	Primary union except at small drainage opening.	Recovery.
3	B. 42, F.	Double laceration of cervix uteri. Para- and perimetritis.	Denudation of ulcerating surfaces. Approximation of flaps with catgut.	Primary union.	Recovery from operation. Recovering from metritis.
39	P. A. 42, M.	Tuberculous bubo of left groin. Openings on abdomen and in perinaeum.	Incisions 4 in. and 2 in. long. Flaps dissected up. Infected tissues extensively trimmed away.	Primary union.	Recovery.
40	H. M. 19, M.	Chancroidal bubo, right groin.	Single incision. Mass trimmed out.	Left to granulate.	Recovery.
41	J. G. 21, M.	Tuberculous (?) bubo of right groin.	Single incision. Mass trimmed out.	Primary union except at small drainage opening.	Recovery.
42	S. T. 24, M.	Urethral stricture.	Internal urethrotomy.	Granulation.	Recovery.
43	T. F. 44, M.	Urethral stricture.	Internal urethrotomy.	Granulation.	Recovery.
44	C. S. 22, M.	Urethral stricture.	Internal urethrotomy.	Granulation.	Recovery.
45	I. McC. 40, M.	Urethral stricture. Extravasation of urine.	External urethrotomy. Perineal and gluteal incisions all kept widely opened.	Granulation.	Recovery.
46	A. R. 17, M.	Varicocele.	Small scrotal incision. Ligation of veins with silk worm gut.	Primary union.	Recovery from operation, but not from varicocele.
47	P. M. 59, M.	Internal and external hæmorrhoids.	Ligation and excision of five large piles.	Granulation.	Recovery.
48	A. W. 39, M.	Hæmorrhoids.	Ligation and excision of several of the masses	Granulation.	Recovery.

TRUNK.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
49	G. 40, M.	Hæmorrhoids and fistula in ano.	Ligation and exci- sion of two piles. Walls of fistula trimmed out. Wounds left open.	Granulation.	Recovery.
50	L. S. 32, M.	External hæmor- rhoids.	Several tags snip- ped off.	Granulation.	Recovery.
51	K. 26, F.	Hæmorrhoids.	Ligation and exci- sion of three or four of the hæmorr- hoids.	Granulation.	Recovery.
52	M. S. 42, F.	Cold abscess of whole right gluteal region. (No tu- berculosis of bone discovered.)	Incision as long as buttock. Walls of abscess scraped.	Granulation.	Recovery.
53	L. S. 22, F.	Extensive mamma- ry abscess.	Several long incisi- ons. Contents washed out with antiseptic solu- tion.	Granulation.	Recovery.
54	N. F. 40, M.	Ischio-rectal ab- scess.	Incision. Contents washed out with antiseptic solu- tion. Left open.	Granulation.	Recovery.
55	M. 30, M.	Enormous peri-rec- tal abscess. (Pas- sive pæderasty admitted as cause by patient.)	Long incision at in- ner gluteal region of each side, and great quantities of decomposing pus and slough- ing cellular tissue washed out with antiseptic solu- tions.	Granulation.	Recovery.
56	O. 32, F.	Three tortuous fis- tule in ano.	Incision. Walls cu- retted. Paquelin cautery used over walls of sinuses. Wounds kept open.	Granulation.	Recovery.
57	E. B. 30, M.	Fistula in ano.	Incision. Walls cut out with sharp spoon. Wound kept open.	Granulation.	Recovery.

TRUNK.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
58	U. DiS. 35, F.	Two fistulæ in ano.	Incision. Walls cut out with sharp spoon; wound kept open.	Granulation.	Recovery.
59	L. J. 35, M.	Numerous anal fissures.	Anal sphincters dilated. Margins and bottoms of fissure trimmed with small scissors.	Granulation.	Recovery from operation. More fissures shortly afterward.
60	E.B. 21, M.	Venereal warts.	Removal with knife and cautery.	Granulation.	Recovery.
61	W.N. 22 M.	Venereal warts appearing as extensive cauliflower like growth.	Circumcision. Removal of warts with knife and cautery. Wound not closed.	Granulation.	Recovery from operation. Return of warts later.
62	W.E. 29, M.	Long prepuce.	Circumcision.	Primary union in almost entire wound.	Recovery.
63	E. S. 2, M.	Long prepuce.	Circumcision.	Primary union in almost entire wound.	Recovery.
64	J. G. 21, M.	Long prepuce.	Circumcision.	Primary union in almost entire wound.	Recovery.
65	G.A. 34, M.	Syphilitic necrosis.	Removal of port'n of right sup' maxilla including canine eminence, incisive fossa, and ant. nasal spine. Removal of larger part of vomer. Wounds left open.	Granulation.	Recovery from operation. Still under treatment for syphilis.

UPPER EXTREMITIES.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
66	D.K. 35, M.	No. 32 bullet splin- tered external con- dyloid expansion, and a couple of inches of the shaft of the left humerus in half of its diameter.	Long incision. Re- moval of frag- ments of bone and of bullet. Chisel- ing of rough por- tions of bone.	Primary union ex- cept at drainage opening.	Recovery.
67	J. S. 2, M.	Tuberculous caries of portion of head and neck of left humerus. Cold abscess of nearly whole outer half of arm.	Incision from just above external ep- icondyle to acro- mion process of scapula. Excision of diseased por- tion of bone; wall of abscess cavity trimmed with scalpel and sharp spoon.	Primary union ex- cept at drainage opening.	Recovery from op- eration. Drainage fistula remains open. Shall op- erate again.
68	R.H. 17, M.	Necrosis of neck and portion of head of left hu- merus.	Medullary cavity opened through chiselled canal, and sequestrum removed. Wound kept open.	Granulation.	Recovery.
69	M.S. 58, F.	Compound commi- nated fracture of condyles of left humerus (blow).	Long incision thro' triceps ten- don, and down along inner bor- der of ulna. Con- dyles remove d. Rough end of hu- merus resecte d.	Primary union ex- cept at drainage opening.	Recovery with "flail" joint.
70	N. 50, M.	Hard encapsulated smooth movable tumor in connect- ive tissue of ex- ternal condyloid space of left arm. (Pigeon's egg size.)	Removal of tumor and capsule thro' an incision 2 inches long.	Primary union.	Recovery.
71	N.H. 23, F.	Olecranon bursitis. Chronic.	Removed contents of sac, and dis- sected out the thickened walls. Wound not closed on account of chronic cellulitis in vicinity.	Granulation.	Recovering when last seen.

UPPER EXTREMITIES.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Result.	Final Result.
72	F.F. 16, M.	Cogwheel injury. Transverse section at middle of right forearm crushed and lacerated. Compound comminuted fracture of radius and ulna. Muscles and skin torn apart and stripped from bones. Ulnar artery intact. Nerves paralyzed generally, but none of them destroyed. Narrow bridge of skin over ulna, only skin left at injured part of arm.	Two inches of radius and ulna resected, drilled and sutured with silver wire. Crushed muscles cut away and good ends sutured together with cat gut. Skin margins trimmed and sutured together. (Approximation allowed by a inch shortening of bone.	Primary union in almost whole of wound. Tissues infiltrated with serum so that wound was purposely opened a little for free drainage.	Recovery. Fairly good use of all muscles and nerves, but not until ununited ulna had been resected again and allowed to become attached to radius. Right arm much weaker than left one, but used in "all kinds of work."
73	R. 15, M.	Whole of left thumb crushed, cold and bloodless.	Amputation through metacarpal. Customary flaps.	Primary union except at small drainage opening.	Recovery.
74	— 40, M.	Pea sized cystic tumor (cholesterine within) of sheath of flexor sublimis tendon of 2nd phalanx of 2nd right digit.	Removal of cyst.	Primary union.	Recovery.
75	— 40, M.	Two very large "warts" over metacarpal of right thumb.	Removal of elliptical segment of skin on which warts were situated.	Primary union.	Recovery.

LOWER EXTREMITIES.

76	W.D. 19 M.	No. 22 bullet wound of inner side of right thigh. No important structures injured,	Long incision carried downward to femur.	Primary union except along drainage tract.	Recovery.
77	S.T. 26, M.*	Tuberculous synovitis of left knee.	Volkman's operation. Patella sawn in two and synovial membrane trimmed off with scissors.	Primary union except at upper skin flap which sloughed over patella as result of too firm compression with bandage.	Developing general tuberculosis of the joints of the extremities when last seen.

*Reported previously in Medical Record.

LOWER EXTREMITIES.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
78	F. G. 52, M.*	Fracture of right patella, recent. Two large fragments; one small one.	Cross-shaped incision. Joint cavity washed out. Fragments sutured with two silver wires.	Primary union except along line of one skin incision where sutures gave way too soon.	Recovery. Bony union. Active mobility to right angle at present.
79	P. C. 27, M.*	Fracture of right patella, old. Rupture of fibrous band of union, cause for operation.	Transverse incision. Joint cavity washed out. Bony surfaces of 2 fragments of patella freshened and approximated at lower corners with 2 silver wires.	Primary union except along superficial line of skin incision where sutures gave way too soon.	Recovery. Firm fibrous union. Patient said to use this leg as well as he uses left one.
80	—40, M.	Housemaid's knee.	Incision on inner and outer sides of tumor. Contents and wall removed with sharp spoon.	Primary union of deep parts. Incision of skin left open.	Recovery.
81	E. H. 21, F.	Housemaid's knee.	Incision on inner and outer sides of tumor. Contents and wall removed with sharp spoon.	Primary union of deep parts. Incision of skin left open.	Recovery.
82	W. A. 42, M.	Suppurative arthritis of right knee. Cause unknown.	Incision on outer and inner side of joint. Joint cavity very thoroughly washed out with antiseptic solutions. Incision left open to carry drainage tubes.	Healthy granulation about tube.	Recovery, with fair use of knee.
83	T. K. 13, M.	Ankylosis of knee following traumatism. Leg flexed and fixed. Hamstrings tense.	Complete excision of knee. Silkworm gut sutures for bones. Exsection of portions of hamstrings through separate incisions.	Primary union except where 2 or 3 superficial skin sutures gave way too soon.	Recovery. Bony or firm fibrous union. Leg useful.
84	J. F. 30, M.	Epithelioma of leg at old ulcer following compound fracture of tibia.	Amputation at middle of thigh.	Primary union obtained. Healthy granulations.	Recovery.

*Reported previously in Medical Record.

LOWER EXTREMITIES.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
85	J. V. 50, F.	Sciatica caused by malignant tumour of left ovary.	Incision 2 1/2 in- long. Sciatic nerve stretched.	Primary union at first, but too early removal of sutures allowed wound to tear apart super- ficially.	Recovering when sudden increase of malignant growth caused intestinal perforation and death. Sciatica stopped by the operation. No pa- ralysis.
86	A. F. 35, M.	Ulcerated stump of leg. Amputation years before for compound frac- ture.	Reamputation thro' tuberosity of the tibia. Side flaps; short.	Primary union ex- cept at small drainage can a l. Soft free scar.	Recovery.
87	J. S. 83, M.	Gangrene of foot. Chronic cellulitis of ankle.	Amputation at junc- tion of lower and middle thirds of leg. Short side flaps.	Primary union ex- cept at two tiny points. Soft free scar.	Recovery. Using two canes. Walks about town, with artificial leg, and limps hardly at all.
88	M. S. 2, F.	Bow legs.	Incision over mid- dle of upper thirds of tibiae. Tibiae chiseled through. Fibulae fractured.	Primary union ex- cept at narrow line of skin incision.	Recovery. Slight bowing of femurs not worth correct- ing.
89	R. S. 3, F.	Knock knees.	Incisions over most prominent curves of tibiae and fibu- lae. Both bones chiseled through on both legs.	Primary union.	Recovery.
90	J. K. 28, M.	Fragments of ne- crosed bone at site of old compound fracture.	Removal of seques- tra. Wound left open.	Granulation.	Recovery.
91	M. F. 27, F.	Old ulcer of leg.	Thickened walls and floor cut away. Skin grafting la- ter.	Granulation.	Recovery nearly complete when patient disappear- ed.
92	— 50, M.	Old ulcer of leg.	Thickened walls and floor cut away. Skin grafting later.	Granulation.	Recovery.
93	H. D. 22, M.	No. 44 (?) bullet wound of lower part of left leg. Bullet lodged in os calcis. Abscess of whole of calf of leg.	Bullet removed. Incisions at each extremity of ab- scess, and walls scraped with sharp spoon. Half diameter of tendo Achillis cut away because of slough- ing.	Primary union of larger part of op- posed wall. Skin incision left open to granulate.	Recovery.

LOWER EXTREMITIES.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
94	W. H. 25, M.	Old dislocation at left ankle, 15 years, resulting from rupture of external lateral ligaments.	Excision of articular surfaces of astragalus tibia and fibula at ankle. Bones sutured firmly together with silk wormgut.	Primary union except at small drainage opening.	Recovery, with stiff, strong ankle. Bony union.
95	W. F. 38, F.	Soft sarcoma (?) involving extensor longus tendon of 3rd left toe. Tumor size of hen's egg and extending upon annular ligament. Similar smaller growths involving sheath of peroneus tertius tendons of both feet.	Removal of tumors, and of three and one-half inches of involved extensor longus tendon.	Primary union except where two or three superficial sutures had disappeared too soon.	Recovery.
96	J. C. 65, M.	Large bunion at first metatarsophalangeal articulation. Right foot.	Excision of distal end of first metatarsal bone.	Primary union except along narrow margin of thin skin which rolled up and separated.	Recovery. Soft scar. Quite free movement at articulation.
97	— 47, M.	Bunions due to hallux bursitis Podagra.	Excision of bursæ.	Primary union except along margin of thin skin which rolled up and separated.	Recovery from bursal trouble.
98	W. W. 14, M.	Second, third, fourth and fifth toes of left foot crushed. Corresponding heads of metatarsal bones crushed. Skin stripped from two-thirds of dorsum of foot.	Excision of crushed parts. Flap made from sole. Large part of dorsum pedis left uncovered.	Primary union of short sole flap.	Recovery after extensive skin grafting; with useful foot.
99	T 19, M.	"Ingrowing toe nail."	Removal of strip of over-hanging integument.	Granulation.	Recovering. Still under treatment.

LOWER EXTREMITIES.

No.	Name Age & Sex.	Case.	Operation.	Intermediate Re- sult.	Final Result.
100	C.M., 40, M.	Deep fistula of foot. Remains of previous amputation wound through first and second metatarsals of left foot.	Long incision. Cartilage-like scar tissue removed.	Primary union.	Recovery. Relapse several weeks later.

SUMMARY.

Whole number.....	100.
Cases in which an attempt at obtaining primary union was made.....	66.
Cases in which primary union was obtained in the whole or greater part of the wound.....	65.
Cases in which the wound was purposely allowed to heal by granulation.....	34.
Cases with intercurrent of septicæmia, pyæmia, erysipelas or tetanus.....	0.
Deaths resulting from operation.....	0.
Deaths resulting from the original disease or injury.....	6.

(Namely, No. 6, recurrent epithelioma; No. 13, gunshot wound of brain; No. 14, crushed skull and brain; No. 5, "broken neck;" No. 28, puerperal peritonitis; and No. 85, malignant ovarian disease.

The cases which I have recently operated upon, and which are consequently still under treatment, are: One laparotomy with cholecystectomy, one exploratory laparotomy, four amputations of the breast, and one ingrowing toe nail. All of these patients are in good condition and I expect nothing less than complete recovery for all of them.

In another and similar list of cases, the operations for hæmorrhoids and for fistula in ano would be done in such a way as to gain primary union, instead of allowing repair by granulation to follow.

EDITORIAL ARTICLES.

OPERATIVE ATTACKS UPON THE HUMAN BRAIN.

1. Brain Surgery. By Victor Horsley, B.S.F.R.S. *British Medical Journal*, 1886, Oct. 9.
2. The Condition of the Bones of the Skull, and the Dura Mater in Cases of Tumour of the Brain. By W. Hale White, M.D. *Guy's Hospital Reports*, Vol. XLIII, 1886.
3. One Hundred Cases of Cerebral Tumour, with Reference to Cause, Operative Treatment, Mode of Death, and General Symptoms. By W. Hale White, M.D. *Guy's Hospital Reports*, Vol. XLIII, 1886.
4. Middle Meningeal Hæmorrhage. By W. H. A. Jacobson, M.D. *Guy's Hospital Reports*, Vol. XLIII, 1886.

1. In the Section of Surgery at the recent annual meeting of the British Medical Association, Mr. Victor Horsley presented a communication in which he detailed three cases in which he had methodically attacked parts of the human brain by surgical procedures, removing portions that were the subjects of disease, being guided in the preliminary steps for exposing the affected parts by already established facts of cerebral localization.

The first case was that of a man, æt. 22, who, when 7 years old, had sustained a depressed comminuted fracture of the skull, with loss of brain substance, from which he had finally recovered after a history of free suppuration, hernia cerebri, and temporary hemiplegia. At about 15 years he began to have fits, which were very intermittent. With the lapse of time the number of fits, occurring in batches, had become enormous, as many as 3,000 having occurred during one fortnight shortly before being subjected to operation. These fits were almost always of the same character, usually commencing in the right lower limb, sometimes in both the right limbs simultaneously. The parts affected were in the order of lower limb, upper limb, face and neck; the character of the movements was, first, extension, then confusion, finally

flexion. From these phenomena it was inferred that the focus of discharge was situated around the posterior end of the superior frontal sulcus. The patient was distinctly hemiplegic, even ten days after the last fit, but he could perform all the movements of the right limbs, though about half as strongly as on the left side; there was no affection of sensation on the right side, while the reflexes, superficial and deep, were exaggerated in both the right limbs.

On the left side of the vertex of the head (the exact site as determined by measurement being the centre of the upper third of the ascending frontal convolution; that is posterior to the hinder end of the superior frontal sulcus) there was a quadradiate scar, opposite the centre of which the bone could be felt to be wanting, so as to form an oval opening in the skull, the long diameter of which was about one inch, and parallel to the sagittal suture. Pressure on this scar always gave pain, which was very greatly increased when the patient was suffering one of his paroxysms of fits.

Operation, May 25, 1886.—The bone around the old opening was freely removed; the dura mater, arachnoid, the skin being found to form a homogeneous mass of fibrous tissue; the former was raised with the flap. The scar in the brain was found to be highly vascular, of a deep red color, and about 3 centimetres long and 2 broad. The membrane covering the brain around appeared to be very opaque, and the brain of a slightly yellower tinge than usual. The scar, and about half a centimetre of surrounding brain-substance was excised to the depth of 2 centimetres. It was then found that the scar-tissue penetrated a few millimetres further into the corona radiata fibres of the marginal convolution. This portion was then removed, and the wound closed. In the removal of the mass, three fair-sized veins, coming directly from the middle of the area for the upper limb, had to be ligatured, since they passed directly into the scar. The wound completely healed in a week. The tension of serum was twice relieved (once, probably, unnecessarily). The most interesting point now to be recorded is, that after the operation the patient was at first completely paralysed in digits of the right upper limb; and for further

flexion of the wrist and supination of the forearm. Coupled with this motor paralysis, there was loss of tactile sensibility over the dorsum of the two distal phalanges of the fingers. He could not localize the touch anywhere below the wrist within the distance of one internode; finally, he could not tell the position of any of the joints of the digits. Then we have here, apparently, a distinct instance of loss of tactile sensibility and muscular sense, coupled with motor paralysis, all due to lesion of the cortex. It cannot, however, be too clearly understood that it is very possible that some of the fibres coming from the gyrus fornicatus in the corona radiata may very probably have been injured. This condition of motor and sensory paralysis gradually disappeared in the course of the next two months. Up to the present time the patient has had no fits.

The SECOND CASE was likewise in the person of a young man,, æt. 20. In January, 1884, he began to have "cramps" in the left thumb and forefinger, these consisting of clonic opposition of the named digits, and occurring about twice a day for three months. The first severe fit occurred in March, 1884. Spasm spread up the arm, and the patient fell. He had the second in January, 1885. Then followed a series of remissions of the twitchings, until, in August, 1885, another severe fit inaugurated a series of fits, occurring once or twice a week until admission on December 4, 1885. The character of the fits was almost always the same. They began by clonic spasmodic opposition of the thumb and forefinger (left), the wrist next, and then the elbow and shoulder were flexed clonically, then the face twitched and the patient lost consciousness. The hand and eyes then turned to the left, and the left lower limb was drawn up. The right lower limb was next attacked, and finally the right upper limb. Paralysis of the left upper limb frequently followed a fit. At frequent intervals every day the patient's thumb would commence twitching, but progress of the convulsion could often be arrested by stretching the thumb or applying a ligature. Deep reflexes were exaggerated in the left upper limb. The patient frequently had severe headache, beginning at the occiput and shooting forward, especially to the parietal region. Experiments of

the author having shown him that the movement of opposition of the thumb and finger can be elicited by minimal stimulation of the ascending frontal and parietal convolutions at the line of junction of their lower and middle thirds, it was believed that this patient was suffering from an irritative lesion of unknown nature situated in the part of the brain thus indicated. An exploratory operation was therefore decided upon.

Operation, June 22, 1886. The seat of the lesion having been determined by measurement, a large trephine was applied, and on raising the dura mater, a tumour came into view. More bone was removed above and in front, so as to completely expose the mass to which the dura mater was adherent. The border of the tumour stood out about one-eighth of an inch from the surface of the brain, and it was much denser than the brain substance. It appeared to be only half an inch broad, but as the brain substance all round it for more than half an inch appeared dusky and rather livid, the operator removed freely all the part apparently diseased. Before closing the wound the centre of the thumb area was removed by free incision, in order to prevent, as far as possible, recurrence of the epilepsy. Numerous vessels were ligatured.

The wound was closed. Five-sixths of it healed by the first intention in a week. The remaining sixth, just at the lower border of the flap, gave way and healed by granulation, after separation of a small piece of skin at the edge. The after-condition of the patient was most interesting and important. There was, next day, partial motor paralysis of the left side of the face (lower division), complete motor paralysis of the left upper limb, from and including the shoulder. On the 27th of June, there was noted left hemianæsthesia to a light touch (sensitivity to pain unaltered), localization of a prick of a pin very deficient all over the left side, perfect on the right, complete loss of muscular sense in the left upper limb below the shoulder. On the second day after the operation, when making an effort to move the left upper limb, the patient suddenly put his hand to the wound, and said he felt a "buzzing" in the head there. When the left upper limb was pas-

sively moved, he also complained that pain seemed to shoot up the "bones of the limb," side of the neck, and through the hand to the wound. The deep reflexes were much exaggerated on the left side in both limbs. All the above conditions gradually improved, and at the date of meeting, the patient had regained everything, except that the grasp of the left hand was not quite so good as before and the fine movements of the fingers remained hampered. Further, the deep reflexes on the left side are at the present time still very much exaggerated. The patient had, in July, a few slight twitches in the three right fingers; none in the thumb or index; no fits since operation. The tumour was composed of dense fibrous tissue, with two caseated foci, microscopical examination proving it to be tubercular.

The THIRD CASE was still again in the person of a young man, æt. 24 years. When five years old, the shaft of a carriage fell on the vertex of the head, inflicting a wound and slight punctured fracture. When 13 years old, he was kicked by a horse on the same spot. Three months later the fits began. The fits occur usually in batches of three or four every three weeks.

The patient was a tall, powerful young man, with numerous scars about the head, due to falls, etc., when fits had occurred (he also had most of his teeth kicked out by horses when he had fallen down near them, his occupation being that of a stable-help). There was the scar and minute depression of a right depressed fracture in the upper anterior angle of the left parietal bone, close to the middle line. This scar and the scalp around were very tender to pressure. The patient frequently had intense headache at this point, always increased (with also the tenderness) when the tendency to fits came on. There was almost complete right hemianæsthesia, the patient neither feeling a touch, nor a prick with a pin. The application of a strong faradic current to the affected side, completely dispersed this hemianæsthesia, but left the fits unaltered.

The aura was entirely abdominal. The patient had a feeling as if he were going to defæcate, accompanied sometimes by a sharp pain in the left side of his abdomen. This was followed by tightness in the throat, and sometimes a spasmodic cough. The head (and frequently the

eyes) then turned to the right; the right arm was jerkily protruded, and the patient lost consciousness. All the limbs became affected, that is, powerfully flexed, as a rule; the lower limbs, however, being frequently extended. After the fit, the patient stated that the right arm felt weak for some time.

The site of the slight depression in the skull coincided with the location of the posterior third of the superior frontal convolution. The researches of the author and Professor Schäfer had already shown that the motor abdominal centres are just opposite the hinder end of the superior frontal sulcus. Professor Ferrier has also shown that the area for movement of the head and neck lies below this sulcus, and that the area for protrusion of the arm lies about the hinder end. The symptoms of the patient, therefore, as well as the site of the cicatrix pointed to an irritative lesion in the posterior third of the superior frontal convolution. The following exploratory operation was accordingly done:

Operation, July 13th, 1886.—A flap being raised from the skull, and the bone trephined close to the left depression, it was found that there had been splintering of the inner table, so as to form a rough coronet round the inner orifice of the minute puncture of the skull, the said puncture being filled with scar-tissue. Further, the dura mater was found to have been torn by the original injury, and projecting downward into a cavity in the brain was a rough small plate of bone. These fragments being removed, and the dura mater freely opened, the cavity just mentioned was found to be wedge-shaped, and about one to five centimetres broad, filled with fluid and loose connective tissue. It was situated exactly where diagnosed (*vide supra*). By means of a circumscribing cut, at a distance of about five millimetres, the cavity was then removed.

The wound was completely healed in four days. One week after the operation, the patient complained of weakness in the whole right upper limb. All movements were affected, especially those of the hand. This paresis is extremely interesting, as being, without the slightest doubt, an example of male hysterical paralysis, and its connection with the functional anæsthesia before the operation is obvious. The interval of six or seven days before its appearance exactly coincides with that

given recently by Professor Charcot. This paresis had, at the date of the meeting, practically disappeared.

REMARKS ON OPERATIVE TECHNIQUE. Mr. Horsley attributes much of his success in overcoming the difficulties and dangers of his operations, and in conducting his patients to such rapid recovery to the details of his operative technique, which are as follows:

Preparation of the Patient.—The day before the operation, the patient's head is shaved and washed with soft soap and then ether; next the position of the lesion is ascertained by measurement, and marked on the scalp. The head is then covered with lint, soaked in 1 in 20 solution of carbolic acid, oil-silk and cotton-wool, being thus thoroughly carbolized for at least twelve hours before operation. Finally, the patient has the usual purgative administered the evening before, followed by an enema on the morning of the operation.

Anæsthetic.—The method of narcotizing the patient is most important, and consists of the administration, by hypodermic injection, of a quarter of a grain of morphine, after which the patient is chloroformed. The object in giving the morphine is two-fold. In the first place, as is well known, it allows of the performance of a prolonged operation, without the necessity of giving a large amount of chloroform. In fact, the amount actually used in an operation lasting two hours has been very small. The second reason for employing morphine is, perhaps, the more important, since it is based upon the fact determined by Professor Schäfer, and the author from experiments on monkeys—namely, that this drug causes well-marked contraction of the arterioles of the central nervous system; and that, consequently, an incision into the brain is accompanied by very little oozing if the patient be under its influence. Ether has not been employed in operations on men, from the fear that it would tend to cause cerebral excitement; chloroform, of course, producing, on the contrary, well marked depression. Naturally, if there existed any heart-complication, the above theoretical considerations would be disregarded in favor of the safer narcotic.

Treatment of the Wound.—The author believes that the high mortality, which has followed the operation of trephining heretofore, has been caused by septic meningitis coming on after opening the dura

mater. He, therefore, has been impelled in his operations to adopt strict Listerian methods, including the use of the carbolic spray, 1 in 20 carbolic lotion, and dressings of carbolic gauze.

Line of Incision.—It is the general custom to remove the soft parts from the cranium by means of a cruciform cut. This method is practically inconvenient, since four distinct flaps have to be held back, requiring as many assisting hands, all very much in the way. If, on the contrary, a semi-lunar flap be raised, it can be simply thrown back, and requires no more holding; 1. The incision must be carried vertically to the bone, and all parts superficial to the periosteum raised with the flaps. 2. The curve must be a shallow one, to avoid cutting collateral vessels. 3. It must be so drawn as not to divide the main arterial trunks supplying that portion of the scalp. (This can be very easily done without interfering with the first twenty-four hours' drainage of the wound, even if the flap be turned downwards, since, as the patient lies in a supine position, the discharge can always escape freely from the posterior border). The periosteum should be reflected by a crucial incision from an area corresponding to the first trephine-hole, and subsequently as more bone is cut away.

Removal of the Bone.—One of the safest and most rapid methods is to make a couple of trephine-holes at the opposite extremities of the area to be removed, then to half cut through the sides of such an area with a Hey's saw, and, finally, to complete the division with a powerful bone-forceps. The opening of the skull should be commenced by the removal of a large disc with the trephine, and then the dura mater separated as far as possible from the under surface of the bone to be removed. Where it is possible to preserve the dura mater intact, the portions of the bone removed should be preserved in warm aseptic sponges, and, at the end of the operation, should be placed between the skin and dura mater, after having been divided into small fragments.

Treatment of the Dura Mater.—The dura mater should be incised round four-fifth of the circumference of the area exposed at one-eighth inch distance from the edge of the bone, so as to render it possible to stitch the edges together afterwards. The dura mater is best opened

first by incision with the scalpel, and then by blunt-pointed curved scissors, great care being taken not to wound the meninges beneath. The main branches of the middle meningeal artery are best secured by a ligature passed through the dura mater just outside its cut edge, and knotted before the vessel is divided.

Treatment of the Brain.—The first practical point to notice after the division of the dura, is whether the brain immediately bulges into the trephine-hole or not. The experience of the author inclines him to the belief that the fact of the brain bulging very prominently into the wound, indicates pathological intra-cranial tension—a piece of evidence which, if true, is of the highest importance, since, other things being equal, it will indicate the presence of a tumour. The color of the membranes should next be noted, since the existence of a slight yellowish tinge, or, possibly, the contrary condition, namely lividity, will indicate the existence of a tumour beneath the cortex in the corona radiata. An accurate knowledge of the arterial and venous supply of the brain is highly necessary, to enable one to appreciate what portions of the brain are actually, or likely to be, deprived of their blood supply when portions of the brains are removed. Alterations in the density of the brain must likewise be observed, though it must be remembered that cerebral tumours situated beneath the cortex are scarcely to be detected, save by exploratory incision.

Hæmorrhage from incisions into the brain, though heretofore greatly feared, is easily controlled. The actual cautery is unnecessary and objectionable. The free bleeding, which at first follows an incision, will permanently cease if the wound be plugged for a few minutes with a piece of sponge. Much of the hæmorrhage may be guarded against by the previous administration of morphine. Considering the terminal character of the cerebral arteries, every main vessel should be left intact, where possible. Fortunately, owing to their running into the pia mater, they can be raised from the brain, and especially out of the sulci, so as to allow of the subjacent brain being removed, while, at the same time, the vessel wall is so little damaged that any resultant thrombosis will be of a very temporary nature.

Further, in incising the brain, the cuts in the cortex must be made

exactly vertically to the surface, and directed into the corona radiata, where necessary, in such a manner as to avoid damage of the fibres coming from the portions of cortex, and surrounding the seat of operation. This, of course, is easily done by remembering the paths taken by the fibres from the cortex to the internal capsule. There are many other points connected with the physiology and pathology of the brain which will regulate operative treatment of the same, such, for instance, as the taking care to leave, if possible, portions of each centre, so that the representations of the movements of any particular joint may never be totally destroyed, for total destruction means obviously a permanent paralysis on the opposite side of the movements previously regulated by the cortical centre.

A portion of brain removed, whether normal or abnormal, does not leave, as might have been supposed, a permanent gap with vertical sides, for, even in a very short time, the floor of the pit—that is, the corona radiata—bulges almost to a level with the surrounding cortex. In addition, the cut edges become slightly everted, and if less brain than bone is removed, they are extruded into the opening in the skull. Thus, owing to the mechanical relations between the brain and skull, there is, normally, a tendency to *hernia cerebri*. *Hernia cerebri* can only occur when the reflected flap of scalp has not united by the first intention, a further necessary factor being decomposition in the wound, and conversion of the latter into a suppurating cavity.

The advantage of raising a large flap of scalp, which can be laid down again like the lid of a box, will now be obvious, since, being continuous throughout, it offers plenty of resistance to the upward pushing brain, which the point of meeting of four cross cuts can never do; this, indeed, on the contrary, favoring the very thing one wishes to avoid. The principal resistance to this hernial protrusion of the normal brain is, of course, supplied in other ways. (See Drainage and Dressing, below).

Closure of the Wound.—All oozing, etc., having been made to cease by gentle pressure with a soft sponge, the flap must be laid down and secured with medium silk sutures at distances of one centimetre, and between these, horsehairs.

With the closure of the wound, we are brought to consider the important question of drainage. The conditions of the problem that now engage attention are to secure union by first intention—that is, firm union in four or five days, together with pressure upon the brain which tends to extrude. In addition to this, it is desirable to arrange matters so that, when the wound is finally healed, the flap of skin may be separated from the brain beneath by a cushion of soft normal (that is, non-inflammatory) connective tissue. All these latter conditions are to be obtained by allowing a certain amount of tension of wound-exudation within the cavity. During the first twenty-four hours, there is a steady oozing of blood and serous fluid from the cut surfaces. This is best removed; and, therefore, a drainage tube should be put in at the most dependent point of incision (that is, as the patient lies in bed). This tube is to be taken out the next day, and the wound carefully dressed, firm, but gentle, pressure being made over the centre of the flap. If the wound-exudation that subsequently collects in the cavity, accumulates to any appreciable extent, on the third day the patient may complain of some pain and throbbing in the wound, which, when exposed, will be found to be distended in the centre, the periphery being firmly united. Now comes a most difficult point in the treatment—namely, the question whether this tension is to be allowed to proceed, or whether it should be released. By adopting the latter measure, the advantages of the pressure will be lost; so that the point in question is one requiring special attention. The practical feature upon which it is to be decided is the very simple one whether the primary union is in danger of being broken down by the pressure or not. If the former is the case, the pressure can easily be diminished by gently opening up the track of the drainage-tube with a probe, and liberating some of the exudation. The value of the tension in reducing the tendency to hernial protrusion is obvious; but it should be remembered that, until it is finally absorbed, the heightened pressure serves two purposes. In the first place, it compels the lymphatics of the brain meninges to absorb the fluid, just as the peritoneal vessels do after ovariectomy, so admitting of rapid union of the whole skin-wound; and, in the second place, it acts as a kind of scaffold for the

building up of normal connective tissue in the part. This latter point is very obvious in the lower animals, in which, if the wound be reopened at the end of a few days, the cavity is always found filled with a delicate, spongy pink connective tissue, the meshes of which contain the above mentioned wound-exudation. It is this connective tissue which is to form an elastic barrier between the scalp and the brain. As a general rule, it will never be necessary to do more than relieve the tension in the wound once. At the end of a week or five days, the wound may be lightly covered with a little powdered boracic acid, cotton-wool, and collodion; and the stitches may be removed at any time after the first week. It will always be found that the scalp tends to fall in a little at the seat of operation; but, if the foregoing directions have been faithfully followed out, the hollowing will be slight.

It may be considered as a point of practical importance whether a patient will not run considerable risk in pursuing his avocations with a large gap or gaps in his skull. As a matter of fact, this is of little account, as evidenced by experience.

2 and 3.—In the first of these papers, Dr. White records the results of his examination of the bony envelope of the brain in cases where tumours have been present, and he has found that that portion of the bone over the region of the new growth is considerably thinned, often so that it is no thicker than cardboard. The dura mater is usually thicker than normal at these points, and this he ascribes to an inflammatory action. The condition of the bones is particularly interesting to those surgeons who still use the straight instead of the conical trephine, depending upon an occasional probing of the incision to determine the depth to which the instrument has penetrated, for if this condition is present they are apt to find that they have perforated the bone and injured the already inflamed dura mater. With the conical trephine the condition can have but little effect as that instrument cannot be driven on after the bone is cut through without causing a fracture.

The second paper is of much greater practical importance, inasmuch as the one hundred cases examined have been carefully tabulated and the number capable of being relieved by operative measures culled

from those where any interference would have been useless if not positively harmful.

In forty-five of the cases the growth was tubercular and only seven of these were capable of being relieved by the knife. It is, of course, a question whether any of them should require the care of a surgeon, and Dr. White has taken the precaution to state his views, as adduced from the examination of the cases under discussion in the following terms:

1st. "The mass occupied some vital part."

2nd. "It was quite or almost inaccessible, as when it was at the base of the brain."

3rd. In all the cases one or more other structures were affected. "We may take it for granted that no one would like to operate on cases in which more than two other organs were diseased."

Twenty-four cases were glioma, of which number only six were suitable for operation.

Sarcoma existed in ten instances, one of which might have been reached and removed. Five were carcinoma, none of them being capable of relief owing to the existence of another infected centre in the body, and the author adds, "considering that cancer of the brain is infinitely rare except when secondary to a growth elsewhere it is obvious that surgical interference will never be needed."

Gummata existed in five cases and, of course, these are included in the number that do not require any surgical attention, as they usually absorb quite rapidly when iodide of potassium is administered in large doses. The author does not state what is generally regarded a large dose of the iodide at Guy's Hospital, and this is a matter of some regret, especially since the matter is under debate, and does not seem to be any nearer settlement than it was some time ago.

Cysts existed in four cases, and one of them could have been reached by the surgeon. Doubtful tumors are classed as three, and two of them are stated as operable.

"Thus it is seen that out of the total number of one hundred, only ten might certainly have been operated upon, and four additional ones might possibly have been, so that in ten per cent. of our cases, we can

hold out some hope of operative relief to our patients, provided, that a correct diagnosis of the position of the growth be made."

This is surely not a very promising showing for the advocates of the most advanced operative procedures in cerebral surgery. The paper is full of interesting and instructive points, and well deserves a careful perusal.

4. As collateral to the question of Cerebral Surgery, from the standpoint presented in the foregoing papers, the Surgery of Middle Meningeal Hæmorrhage is of interest, and is exhaustively treated in the paper by Dr. H. A. Jacobson. The writer has collated a large number of cases in which this complication has resulted after an injury of more or less severity.

The conclusions drawn from this study are, in his opinion, similar to those already advanced by other writers, namely, that trephining should be resorted to as early as possible.

He says that the violence causing the extravasation is often very slight, and may exist without any fracture, or when the bone is simply fissured, or only the internal table is involved; that laceration and contusion of the brain substance are often serious complications; that the history of the case, particularly a lucid interval, are invaluable; that the symptoms of compression are sometimes deferred, and then may appear suddenly, and rapidly cause death; that, as in the cases of tumor of the brain, death frequently, if not usually, results from failure of respiration; that dilatation of the pupil on the side of the clot is an important symptom; and after trephining, a severe, if not fatal, hæmorrhage may set in. He recommends, in dealing with the last condition, that an attempt be made, first, to secure the bleeding point, if this fail, second, he applies a freezing mixture over the dressing, and raises the patient to the sitting position, and, third, if the bleeding still continues, digital compression over the common carotid artery should be made, and in case this hæmorrhage is re-established, after this has been continued for some time, he advises the ligation of the external carotid.

These three papers present the subject of Cerebral Surgery in a very striking and convincing way, and must surely do much to place the operative interferences with lesions, or injuries with the cranial cavity

in a better position than before. With the usual impetuosity and enthusiasm of pioneers in any undertaking, the advocates of operative procedure in cases of this kind, have advised the most radical measures, and the collection of numbers of cases together with a careful tabulation of results, and the possibilities revealed to the careful pathologist, must greatly improve the principles of this branch of surgery.

The writer is able, however, to present only thirteen successful cases out of the seventy upon which his paper is based, which he considers but a poor showing. We feel inclined to take exception to the last statement, for surely eighteen and a half per cent. is a good showing in cases that would without operation have been surely fatal.

SAMUEL LLOYD.

INDEX OF SURGICAL PROGRESS.

GENERAL SURGERY.

I. **Lupus vulgaris and Tuberculosis.** BY M. HENRI LELOIR.

The author reasserts the claim of lupus to be considered a form of tuberculosis of the skin, and relates the following case: A girl six years old, of healthy parents, previous health excellent, one year before had a red patch appear on the back of the left hand, which had increased slowly since. The patch had attained the size of a two franc piece and was slightly papillomatous—the “lupus salêreux” of the author and E. Vidal, which is to lupus vulgaris what fibrous phthisis is to ordinary tuberculosis of the lung. From this patch a slightly painful lymphatic cord led to a tuberculous nodule on the back part of the forearm, which had existed for three months, and had attained the size of a hazelnut. From this tumor a double lymphatic cord could be traced to a similar one, which had appeared one month later. Some weeks afterwards two new tumors were seen to have developed on the internal aspect of the arm, and they also were connected by lymphatic cords. The epitrochlear gland was enlarged to the size of a pigeon's egg, and the axillary glands had begun to swell. After another interval of some weeks, Leloir found that two of the tuberculous tumors had in part softened and ulcerated, presenting the typical appearance of tuberculosis of the skin. The axillary glands had attained the size of pigeon's eggs, and the subclavian glands had enlarged. Examination of the lungs had always been carefully made, but with negative results hitherto. Now, however, unmistakable signs of tuberculous infection were found in the *left* apex. Slight cough, pallor and emaciation were present. Treatment was at last permitted, and the lupus patch on the hand and the tumors which had ulcerated were destroyed with the thermocautery, and iodine was applied to the enlarged glands. Some time later a little subcutaneous tubercular nodule appeared by the side

of the former lupus patch and threatened to lay bare the underlying articulations, but it was destroyed with the thermocautery and injections of tincture of iodine. The lymphangitis and glandular enlargement gradually disappeared, and the pulmonary symptoms improved until (when last seen) there was perceptible only a slightly prolonged and rude respiration.

The extension of the tubercular virus through the lymphatic channels in this case is noteworthy, especially in connection with the acute oedematous lymphangitis (so-called scrofulous, or "white" erysipelas), which is quite common with lupus, particularly of the face. In four cases Leloir saw tubercular infection of the lungs follow this lymphangitis. The pseudo-erysipelas had disappeared for a week or more, but the submaxillary, and sometimes the subclavian glands remained swollen and slightly painful, when the patient suddenly developed febrile symptoms. Careful examination of the lungs (hitherto healthy) revealed tuberculous infiltration of the apex.

Of seventeen cases of lupus vulgaris treated in hospital, Leloir found ten affected with pulmonary tuberculosis, and another with tuberculous arthritis of the knee—agreeing with the statistics of Haslund (Copenhagen), according to which 60% of lupus patients developed tuberculosis secondarily. Of nine private cases, Leloir found pulmonary affection in only one, but in two others the *bacillus tuberculosis* was found in sections of the lupous tissue, and inoculation with the latter produced tuberculosis in guinea pigs. These two cases were young girls, otherwise healthy, who had lost parents by phthisis, and Leloir supposes local inoculation of the bacillus to have been the cause of the lupus.—*Ann-de dermat et de Syph.*, 1886, 7. VII, No. 6, p. 328.

B. FARQUHAR CURTIS, (New York.)

II. Antiseptic Surgery in the Bulgarian War. By M. MAYDL. The author states that of 3,000 men wounded in the war, which were brought to Belgrade, only 51 died; of these 22 deaths were the result of tetanus; the surgical mortality was only 0.9 per cent., "thanks to the use of antiseptic dressings." The sanitary condition of the soldiers was very defective. Erysipelas was rare, and, in spite

of this want of care on the field, M. Blum reports that of 136 cases, of which 116 were lance or sword wounds, 12 complicated fractures and 10 articular wounds, all treated antiseptically, there were no deaths or purulent diseases. The dressings were done with "carbolic gauze at 5 per cent.," and the instruments washed with "disinfectant fluid at 25 per 1,000."—*Med. Press and Circ.* August 25, 1886, p. 153.

III. Device for Distinguishing the Different Solutions of Carbolic Acid. MATTHEW HAY, (Aberdeen). A saturated solution of chloride of sodium is used. If such a solution is added in about equal quantity to a 5 per cent. solution of pure crystalline carbolic acid, the mixture becomes milky and opalescent, and the milkiness does not disappear on shaking; whereas if added to a $2\frac{1}{2}$ per cent. solution, the mixture remains perfectly clear. The opalescence is due to the separation of carbolic acid in the form of minute drops. Chloride of sodium has a greater affinity for water than carbolic acid has, hence it is capable of displacing carbolic acid from its solution. This happens, however, only when the solution of carbolic acid is of sufficient strength. Otherwise they remain side by side in complete solution. In preparing the saline solution, it is preferable to use the pure crystalline sodic chloride employed in laboratories. It is quite a cheap substance. A solution of ordinary salt has often, itself, far from a clear appearance; there is no other objection to the use of ordinary salt.

It is worth noting that heat scarcely appreciably increases the amount of common salt dissolved by water, but it does hasten its solution. But the solution must not be used hot, or it will not precipitate the carbolic acid. If the solution be kept in bulk, it must not be left in a place where its temperature may be reduced very near the freezing point; otherwise the strength of the solution may be weakened by the deposition of the salt.

Add the carbolic solution to the salt solution—say in the test tube—not the salt to the carbolic. If the addition be made slowly drop by drop, it will be observed that each drop produces a small white cloud of separated carbolic acid, which disappears at once by a single shake of the test tube until the carbolic acid solution is equal to about one-

fourth part of the salt solution, when the separated acid no longer disappears on shaking. If too much of the carbolic acid solution be added the precipitate begins to redissolve and the mixture to clear. Also the temperature must not be above 74° F. (24 C.) Dry test tubes must be used.

With regard to the question, "How far can a 5 per cent. solution of carbolic acid be diluted before it ceased to give the reaction?", the author says that the addition of quite a small quantity of water is enough to prevent the reaction; that is, no separation of carbolic acid is obtained which does not disappear on slight shaking.

There are many other interesting details given in the paper, which is rather a long one.—*Lancet*. 1886, August 7.

NERVOUS AND VASCULAR SYSTEMS.

I. Nerve Stretching for Anæsthetic Leprosy. BY MR. A. NEVE. With reference to how long the improvement continues after successful nerve stretching for anæsthetic leprosy, Mr. Neve writes that he still occasionally meets with cases operated on by Dr. Downes, five or six years ago. Many of them continue to have good sensation, others return to have the operation repeated. Certainly, in a large proportion of the cases, the benefit is permanent, and in very few, indeed, is the recurrence rapid or complete. The reader is referred to 170 cases, of which an account was published by the author, in the *Edinburgh Med. Journ.*, two years ago.—*Lancet*, Aug. 14, 1886, p. 325.

C. B. KEETLEY (London).

II. Operations on Nerves. BY MAURICE H. RICHARDSON, M. D., (Boston, Mass). This paper consists of a report of ten cases of operations on nerves, with remarks especially on nerve suture.

Nerve Stretching for Spasmodic Wry Neck.—This case, probably of central origin, presented a right sterno-mastoid muscle suffering from rapid and uncontrollable contractions; constitutional treatment having failed, and immobilization of the head in a plaster helmet being tried without success, the right spinal accessory nerve was exposed and stretched, ten pounds weight being applied. After the operation, the

muscle became perfectly quiet for two months. during which time the left sterno-mastoid became similarly affected, but to a less degree, while, at the end of that period, the spasm returned to the right, but also to a less degree.

Neurectomy. 1. Eight months after a cut over the middle of the right thigh, the patient suffered from pain at that point, and from cramps, persistent and frequent, of the calf of the leg. An incision above the scar, in the usual course of the nerve, showed a small branch of the middle cutaneous, which was followed into the scar; the scar itself, with an inch of the nerve involved in it, was then dissected out, relieving the affection, and leaving a small patch of anæsthesia below the scar, in the part supplied by the excised branch. 2. A cut on the inner aspect of the foot, left a painful scar, referred along the course of the internal saphenous nerve, a part of which, on dissection, was found in the scar, and together with the scar was excised, immediately relieving the pain. 3. For neuralgia of the inferior dental nerve of five years standing, the nerve was divided just above the point of entrance into the dental foramen, which gave relief for two years. The pain having returned in an aggravated form, and lasted for a year, one inch of the nerve was resected, the inferior dental canal being opened from the outside to permit it; immediate recovery followed. 4. In a man suffering from epileptiform neuralgia of the side of the nose and face, in the parts supplied by the infra-orbital nerve, the infra-orbital canal was exposed, and the nerve pulled out of it as far as possible and divided; the peripheral end was then drawn up, its branches dissected down an inch or more and then divided, complete relief resulting.

Primary Nerve Suture.—Two cases are reported, both affecting the ulnar nerve, but as yet they have had but negative results, and were under observation at the writing of this paper.

Resection and Suture.—1. The median nerve was cut by a bursting bottle, resulting in a loss of sensation in the middle and forefingers and the palmar surface of the thumb. On operation, the nerve was found in the cicatrix almost severed; the injured portion was excised, and the ends brought together and sutured, resulting in recovery, complete, a year later. 2. The musculo-spiral nerve was divided by a stab, caus-

ing wrist-drop and the loss of extension in the fingers. although the nerve ends were united at the primary operation; a month later, erysipelas and extensive suppuration of the whole upper arm came on; three months later, there being no return of the functions of the musculo-spiral, the nerve was exposed in the scar, $1\frac{1}{2}$ inches resected, and the ends sutured, resulting in complete and permanent recovery after four months. 3. The ulnar nerve had been completely divided by a pane of glass, and loss of sensation in the little and half of the ring finger followed the healing of the wound; on operation, the ends of the divided nerve were only found after a prolonged dissection, their relations having been considerably altered, and the distal end retracted some distance; they were brought together, end to end, considerable tension on the upper portion being necessary to make it meet the peripheral portion, the ends freshened and sutured, with no apparent return of motor power after three months. The writer believes the method of suturing the sheath of the two ends, or indirect method, preferable to the method of passing the sutures through the nerve itself, or direct method.—*Boston Med. and Surg. Jour.* Oct. 21, 1886.

III. A Case of Ligature of the Common Iliac Artery for Aneurism of the External Iliac; Death on the Seventh Day from Acute Nephritis. By WILLIAM F. FLUHRER, M. D., (New York). The patient was a colored laborer, æt. 35, with a history of syphilis. Thirteen weeks previously a small pulsating tumour was observed in his left groin, which had steadily increased in size and in the strength of its pulsations. Aneurism of the external iliac artery was diagnosed, and ligature of the common iliac for its relief was decided upon. The patient appeared to be in a fair physical condition, and the examination of his urine, the morning of the operation, showed nothing abnormal. The abdomen was opened in the median line, skirting the umbilicus, from a point 2 inches above the upper border of the pubes, to a point $1\frac{1}{2}$ inches above the centre of the umbilicus, and subsequently extended $\frac{1}{2}$ inch upward. The surfaces had previously been rendered aseptic with mercuric bichloride solutions, but as soon as the abdomen was opened, a boro-salicylic acid solution was

substituted. The diagnosis having been verified by digital exploration through a small opening in the peritoneum it was opened the whole length of the wound. A piece of thin rubber sheeting, similar to that used by the dentists for the rubber dam, and 27x36 inches was rapidly spread over the abdomen in such a way that its main portion was on the right of the body and its left edge overlapped the median line but about 5 inches; then it was flushed with warm antiseptic solution and the small intestine drawn through a slit in the rubber, which was carefully wrapped about them so that towels, wrung out of warm solution, being kept constantly about the bag, thus formed, they were kept warm, moist and out of the operator's way. A disinfected silk ligature was then applied at a point $\frac{3}{4}$ of an inch from the tumour and $1\frac{1}{4}$ inch from the bifurcation of the aorta. In about a minute after tying the vessel, the radial pulse was observed to be slowed twelve or fifteen beats per minute, with a marked increase in volume. The abdominal wound was closed with a continuous suture of catgut for the peritoneum, a continuous silk suture for the linea alba, and interrupted silk sutures for the skin, and dressed antiseptically; the patient was completely under the influence of ether for two hours. Patient reacted well from the operation. On the following day, symptoms of nephritis were observed, which continued until on the seventh day he succumbed to the profound exhaustion which the nephritis imposed upon his weakened constitution. The autopsy showed only a slight local peritonitis at one or two points and good union at the point of ligature. The aneurism was found filled with a solid, homogeneous clot. There was also found an aneurism of the abdominal aorta about 5 inches in length. The kidneys were structurally in good condition aside from the lesions of the acute nephritis, although they must have suffered from the prolonged administration of iodide of potassium given for the syphilitic disease; the laparotomy might have exerted a depressing effect upon them, to which could be added the prolonged etherization and the changes in the renal circulation imposed by the change in the course of the blood.—

N. Y. Med. Rec. Oct. 23.

IV. Enucleation of a Neuroma, Which Seemed to Demand Resection of a Nerve. By M. GUNN, M.D., (Chicago). A fibrous tumour in the course of the ulnar nerve was exposed; and it was found that the nerve fibres became lost in the mass at three-fourths of an inch from the upper (apparently spreading out on the surface) and reappeared at about the same distance from the lower end of the tumour. On exploring the mass by a longitudinal incision at the depth of a couple of lines, it was found that from the central mass could easily be separated a capsule of this thickness, composed principally of neoplastic tissue involving and completely obscuring, except at either extremity, the widely separated nerve fibers. After the enucleation of the central mass, the capsule was left continuous at either end with the trunk of the ulnar nerve. The result was a cure with freedom from all pain and impairment of function in the parts to which the ulnar nerve was distributed. The tumour, however, recurred in a little less than four months and was resected; an attempt was made to graft the distal end of the ulnar nerve upon the median and a gradual restoration of function was occurring. A repetition of the former operation in this case would probably have been useless owing to the probability of recurrence at a shorter interval. This case shows how completely lost in neoplasm, nerve fibrillæ may become without impairing their conducting function, and how the adventitious growth may in some cases be enucleated without injury to the nerve.—*Jour. Am. Med. Assn.* Oct. 16, 1886.

HEAD AND NECK.

I. The Question of Hæmorrhage after Uvulotomy. By ETHELBERT CARROLL MORGAN, M.D. (Washington). The author opens his paper with a series of quotations from writers upon the subject beginning with Celsus (A.D. 1885) and ending with Schech (1886), the general opinion being that hæmorrhage after uvulotomy is unimportant and to be controlled by the use of styptics. He then relates a case which came under his care, of a man whose uvula had been excised, and in whom ineffectual attempts had been made to control the

hæmorrhage by styptics ; further efforts in the same direction, torsion and an attempt to fix the base of the uvula by double suture (there being insufficient stump to hold a thread) having proven unavailing, hæmostatis was finally obtained by application of a small spring clamp, such as is used in retaining shirt sleeves in position, the clamp being left in position for several hours. A recitation of twenty cases of uvular obstinate hæmorrhage, many of them hitherto unpublished, follows. He then concludes that the occurrence of this accident may be influenced by (1) an anomalous blood supply—according to Dwight, probably an abnormality of the ascending pharyngeal artery—and (2) a pathological condition of the uvula, such as excessive hypertrophy, the development of a varicose state of its veins, or the existence of acute œdema or ulceration ; excluding the snare, the galvano-cautery and the ligature, hæmorrhage results equally from the use of various instruments ; troublesome hæmorrhage is not necessarily attributable to the removal of too much of the uvula, but the best practice is to restore it as nearly as possible to the normal state ; while the hæmorrhagic diathesis would doubtless have its influence, no such cases have been reported. The hæmorrhage, if persistent, is nearly always arterial, although venous hæmorrhage is occasionally noticed. From these studies the writer concludes : 1. A fatal or uncontrollable hæmorrhage has in one instance followed uvulotomy. 2. A persistent, obstinate or alarming hæmorrhage is only encountered in the rarest instances. 3. A moderate bleeding, ceasing spontaneously or by the use of mild styptics, occasionally happens. 4. The loss of a few drops of blood at the time of operating, followed by slight oozing, is of common occurrence. 5. The most reliable surgical methods for controlling uvular hæmorrhage are the ligature, compression by the clamp or forceps, or by the use of galvano- or actual cautery. 6. The most reliable styptics are in the order named, solid silver nitrate or iron persulphate applied directly to the bleeding stump, and solutions of gallo-tannic acid or alum. To these may be added the local use of ice, ice-water and vinegar. 7. The most reliable systemic means are opium, lead acetate, sulphuric acid and ergot. A complete bibliography of the accident is appended.—*N. Y. Med. Jour.* Oct. 16 and 23, 1886.

II. Intubation of the Larynx and Tracheotomy. By I. H. HANCE, M.D., (New York). In connection with a report of five cases of intubation by the method of O'Dwyer, the author tabulates the points of superiority to tracheotomy as follows:

INTUBATION OF THE LARYNX.

The tubes produce no shock during their introduction.

They are instantaneously introduced.

They are easily introduced.

They cause no wound.

They clean themselves.

The inspired air is warm and moist.

There is no increased risk of a complicating pneumonia.

There is no after treatment.

TRACHEOTOMY.

The tracheotomy sometimes produces fatal shock.

It requires from ten to thirty minutes to open the trachea.

It is often times a very difficult operation, especially on a child of from four to six months of age.

It leaves an extensive wound, which is liable to infection from diphtheritic poison, erysipelas, etc.

It requires constant care and attention to keep the inner tube clean.

Artificial means are necessary to make inspired air warm and moist.

The escape of blood or other fluids into the trachea increase the risk of a septic or lobular pneumonia.

The wound requires to be treated after the removal of the tube.

—*N. Y. Med. Jour.* Oct. 2, 1886.

JAMES E. PILCHER (U. S. Army).

III. Operative Treatment of Goitre by Ligation of the Afferent Arteries. By Prof. A. WOLFLER (Vienna). The various methods of treating goitre are still more or less open to objection. Parenchymatous injections are useless in some forms (e. g. in foetal adenoma), and in some cases impracticable. Total extirpation may induce a certain form of cachexia (v. *ANNALS OF SURG.*, vol. I, pp. 72, 76, and vol. III, p. 165), though the numerous cases operated by Billroth have remained free from more than indications of this. Partial resection may, owing to subsequent hypertrophy of the remainder, prove only a temporary relief. Mikulicz's so-called resection with ligation of stump en masse (*ANNALS OF SURG.*, vol. III, p. 165), is too new a procedure to have an established position; it is theoretically open to question, and, unless in very experienced hands, the recurrent nerve would

be endangered. Wölfler here considers the method indicated in the title, first proposed by Muyr in 1629. Early this century the plan was followed in 31 known cases, but was given up, (1) from deaths due to the incomplete wound-treatment of the time; (2) from imperfect results, owing to the fact that the inferior thyroid was never ligated at the same time. This had been done in but one case, viz., by Porta in 1850; although it finally ended in a complete cure, yet the patient nearly died of phlegmonous inflammation and late hemorrhage. In several goitrous dogs W. tied the (in dogs) common thyroid artery. This was followed in a few weeks by considerable shrinkage of the one-half without any gangrene.

W. operated in this manner in October, 1885. The patient was a man of 29 years. who, at work or asleep, had much trouble in breathing, because of a rather large colloid goitre. The right half was somewhat the larger. Both the inferior and superior arteries on this side were tied, also casually the median thyroid vein. The patient could be discharged nine days after the operation—breathing trouble and feeling of oppression were considerably relieved the day after, and gradually subsided completely. The diminution in size of the neck, however, did not progress at the same rate. At the first redressing there was hardly any change, either on inspection or palpation, despite the subjective improvement. A week p. o. the median circumference had diminished 2 cm. and 7 months p. o. 6 cm, when the right side of the goitre had shrunk to one-half the former size, and become soft, hard and nodular; even the left side had diminished some.

In the second article the technique of the operation is considered. A diagram of the local arterial circulation is borrowed from Jæger-Truroth (Strassburg Dissert., 1883). From this and other sources he presents facts indicating, (1) that neither ligation of both superior thyroids nor of the inferior alone, can be considered sufficient, owing to the free anastomoses. It is as yet questionable whether in large, one-sided goitres ligation of both thyroids on that side ought to be accompanied by ligation of the opposite superior thyroid; (2) That ligation of all four thyroid arteries could hardly lead to gangrene of the goitre.

It has been proposed to ligate the veins instead of the arteries, and

in one case (Coartes, 1818), the inferior thyroid vein was tied, the goitre shrinking to one-half its volume. This, however, is much more difficult than ligation of the arteries, unless in case of the superior vein which accompanies the corresponding artery.

The method recommended for finding the superior artery is not new. The more difficult task of finding the inferior has been studied by W. on the cadaver. He favors a way less liable to involve injury to the large vessels at the base of the neck than that of either Velpeau or C. M. Langenbeck.

We should try to tie the artery where it turns from the perpendicular to the horizontal direction. This point is about on a level with the tuberculum caroticum—or a finger's breadth mesially below—and also with the cricoid cartilage. The incision is to be made externally from the carotid between the two parts of the sterno-cleido, though this muscle in the goitrous is broadened and dislocated. Under normal conditions the cut should begin above, at the level of the cricoid cartilage, and reach to the clavicle. The lower end of the cut should fall between the inner and middle thirds of that part of the clavicle extending from sulcus-deltaideo-pectoralis to the sternal end of the bone. Then follows the division of the platysma, the transverse superficial veins and the deep fascia—keeping towards the upper end of the incision. If more room is necessary the slit between the two portions of the sterno-cleido may be extended upwards. The tendinous part of the omo-hyoid muscle now appears in the middle of the wound; this can be drawn outwards and upwards, or divided. At the point where this lay the external border of the jugular is to be freed a little and drawn inwards. The vagus and lateral border of the carotid can now be seen back of the jugular. The retractor now exposes the scalenus anticus muscle, covered by loose tissue and fascia, which is to be torn through on a director. On the right lies the phrenic nerve, which is pushed outwards. If the artery is not now visible on the inner border of the scalenus muscle, the latter can be drawn outwards a little when the bend in the artery will surely present itself. If unintentionally the inner border of the internal jugular has been isolated, the approach of the artery is quite as direct.—*Wien. Med. Woch.* 1886. Nos. 29 and 30.

W. BROWNING (Brooklyn).

ABDOMEN.

I. A Case of Intestinal Obstruction Relieved by Liberating the Omentum from an Omental Hernia. Mr. F. A. SOUTHAM. The patient, a female, æt. 52, had had an irreducible femoral hernia for some time before symptoms of strangulation appeared. She was operated on while in a state of collapse. There was no marked distention of the abdomen, but severe pain in the umbilical region, with tenderness on pressure; beyond an indefinite fulness just above Poupart's ligament, nothing abnormal could be detected in the abdomen. The femoral hernia was soft and not tender. At the operation only a few drops of clear fluid escaped from the sac, and only a small piece of healthy omentum was found in it. Its pedicle was closely adherent to the neck of the sac all round so that no knuckle of bowel could possibly have been recently nipped there.

The omentum was ligatured and removed, and the pedicle allowed to slip back into the abdominal cavity. On recovering from the anæsthesia the patient at once expressed great relief from the operation, the abdominal pain having quite disappeared. There was no recurrence of the sickness, and henceforth all went well with the exception of a troublesome diarrhœa.

This case has an interesting bearing on the contrasted opinions expressed by Mr. Holmes and Mr. Rushton Parker in the *Lancet* (Vol. II, 1883, and Vol. II, 1884).

The author thinks that in his case there was either strangulation by kinking of the colon, or else that there was constriction of some other portion of the bowel, probably the small intestine, by an omental band, continuous with the pedicle of the portion of omentum present in the hernial sac.—*Lancet*. 1886. Aug. 14.

II. "Internal" Strangulated Hernia; Laparotomy. Cure. By M. QUÉNU. A woman, æt. 52, showed signs of internal strangulation. She had an old reducible femoral hernia, the condition of which was quite normal. Therefore Quénu, instead of interfering with this made (on the fifth day) an incision in the linea alba. He found the above mentioned hernial aperture free, but a little external to the crural ring,

he felt intestine tightly nipped in another orifice. He effected reduction by pulling very gently on the intestine, assured himself that it was uninjured, and introducing his finger into the sac from which he had just withdrawn it, recognized a small movable sub-peritoneal sac, independent of the ordinary aponeurotic openings of the region. After having stretched upon his finger the orifice of this small sac, to prevent the repetition of analogous accidents, Quenu closed the abdominal cavity again. The patient recovered, but not without passing through a period of danger from serious pulmonary congestion which appeared soon after the operation.—*Rev. des Sci. Med.* July 15, and *Bull. Soc. de Chir.* XII. No. 2. Pp. 172-180.

C. B. KEETLEY (London).

III. Intestinal Obstruction. Laparotomy. Recovery.

By Dr. A. B. MILES (New Orleans). Patient, a stout, muscular laborer, æt. 35, was admitted to the Charity Hospital, New Orleans, with a history of intestinal obstruction of five days duration. When admitted there was marked abdominal fulness with tenderness, more especially localized in the umbilical region a little to the left of the cicatrix; no definite tumour to be made out on palpation; vomits whatever is given him almost instantly, the matters vomited not being offensive; pulse full, hard and accelerated; temperature a little above the normal. For forty-eight hours attempts to obtain relief by large enemata of warm water, soap and oil were persisted in, without avail. All his previous symptoms having become aggravated, and the vomited matter having assumed a stercoraceous character, laparotomy was done. Under ether an incision from four to five inches was made in the linea alba between the umbilicus and pubis, the skin, fasciæ and muscles divided and the peritoneum exposed; after all bleeding has stopped, this latter was opened on a grooved director and search made for obstruction. To prevent the blood oozing from the edges of the incision from entering the abdominal cavity, a towel soaked in a strong antiseptic solution was made to enclose the whole thickness of each side of the incision in the same way as the cover of a book encases its sheets.

After diligent search, made more difficult by adhesions, probably

from a former case of peritonitis, the obstruction was found a little to the left of the umbilicus; it consisted of a cicatricial band not more than 1 or $1\frac{1}{2}$ line in thickness which encircled the whole diameter of the gut like a ring and obliterated entirely its calibre; the intestine above this ring was dark and congested and natural below. The obstruction was divided by the scissors, and soon after the congestion diminished. The cut edges of the peritoneum were sewed together carefully with small catgut, the skin and muscles were brought together by silver wires. As soon as the patient recovered from the anæsthetic he was placed under the influence of morphine. All vomiting ceased from the time of operation. The case progressed favorably, and on the third day he had two good operations from the bowels and three on the fifth day; the temperature at no time rose above $102\frac{1}{5}^{\circ}$ but was generally much below this; the sutures were removed in seven days, when an accumulation of pus was found between the muscles underneath the skin; the peritoneum had united by first intention; the pus was pressed out at the sutural openings and the wound was soon healed.—*New Orleans Med. and Surg. Jour.* Nov. 1886.

IV. Penetrating Gunshot Wound of the Abdomen Involving the Liver. Intraperitoneal Hæmorrhage. Laparotomy. Recovery. By J. W. HEDDENS (St. Joseph, Mo.). Male, æt. 30, received a pistol-shot wound in the epigastric region, early in 1886. The immediate results were great pain in the right side and back, and in the right shoulder, with dyspnœa. Dr. H., believing that there was hæmorrhage into the abdominal cavity, performed laparotomy, by an incision extending from the wound downwards $5\frac{1}{2}$ inches. The course of the bullet was traced to the liver; a piece of the patient's vest was found in the peritoneal cavity, and removed; about four ounces of blood were also removed. The wound was dressed antiseptically, and the patient made an uninterrupted recovery.—*Transac. Med. Assoc., State of Missouri.* May. 1886.

V. Case of Pistol-shot Wound of the Small Intestine and Mesentery. Laparotomy. By C. A. JERSEY, M.D. (New York). A very fleshy man of poor physique, æt. 44, had shot himself with a 32

calibre pistol, about $1\frac{1}{2}$ inches to the right of the median line and one inch above the umbilicus, and suffered greatly from shock, from which he recovered slowly, but had no vomiting or movement of the bowels nor any recognizable symptoms of internal hæmorrhage; twenty hours after admission to hospital, laparotomy was performed (an incision in the track of the bullet wound having conclusively proven the entrance of the ball into the abdominal cavity) in the median line, extending from about $3\frac{1}{2}$ inches above to about 4 inches below the umbilicus; some bloody serum and a few clots were found in the abdominal cavity. Seven visceral wounds were found, four of the intestine and three of the mesentery, two of these mesenteric wounds only being penetrating; all the wounds were sutured with catgut and dusted with iodoform. The *toilette* of the peritoneum was performed with care and the wound dressed with iodoform dressings. The patient recovered slowly from the shock of the operation, which was severe, and suffered from constant retching and vomiting, restlessness and latterly delirium, until death on the second day. The autopsy revealed good healing in the intestinal wounds and the mesenteric abrasion, but the edges of the mesenteric wounds had separated and their surfaces were covered by a blackened, softened slough discharging pus into the peritoneal cavity. The author infers from this that the portion of the mesentery surrounding the bullet-holes should have been incised, all the contused border removed and the healthy surfaces brought together by sutures.—*N. Y. Med. Rec.* Oct 16. 1886.

VI. Surgical Relations of the Ileo-Cæcal Region. By J. McF. GASTON, .MD., (Atlanta, Ga). A thorough investigation of the morbid conditions of the ileo-cæcal region leads to the following conclusions: 1. That certain modifications are corrected spontaneously or by the process of resolution under treatment. 2. In the early stages of ileo-cæcal disorders, medicinal or mechanical measures are advantageous. 3. That the extra-peritoneal punctures and incisions are beneficial in cæcal inflammation, with or without fæcal abscess. 4. Disorders involving the peritoneum, when not promptly relieved by general treatment, warrant exploratory opening of the abdomen. 5. Im-

pediments of the intestinal canal or morbid accumulations in the abdominal cavity, accompanied by meteorism, call for immediate surgical interference with laparotomy. 6. In case of simple stenosis or malignant growths involving the ileo-cæcal connections, ileo-colostomy is indicated. 7. Gangrenous portions of the intestinal canal necessitate resection and, either direct restoration by suturing the ends of the intestine, or the formation temporarily of an artificial anus. 8. Operative measures in ileo-cæcal derangements should not be delayed until the physical powers have become prostrated, but resorted to while in capacity for reaction of the vital forces.—*Jour. Am. Med. Assn.* Oct. 9. 1886.

EXTREMITIES.

I. Case of Total Extirpation of the Scapula, the External Two-Thirds of the Clavicle and the Entire Arm. By J. LUCAS-CHAMPIONNIERE, M.D., (Paris). A mechanic had his left arm caught in machinery and torn away in the upper third; the skin was destroyed in front to the left half of the thorax, denuding the pectoralis major; the clavicular region was entirely denuded and the external half of the region of the scapula was relieved of its skin; at the lower part of the axilla, a tongue of skin with its hairs was left, but it was stripped off to a great extent. The middle of the humerus was denuded and protruding among the muscular masses surrounding it; the biceps muscle was laid bare to the shoulder, as were all the other muscles of the posterior, external and anterior faces of the arm; the upper part of the arm still remained firmly attached by its ligaments. The vessels were also drawn out, the brachial artery being stretched, but its calibre obliterated at the extremity, and no artery spurted, although there was a general oozing. The nerves suffered the same as the vessels. Although greatly depressed, the patient was conscious. During the following three days he gained in strength so that on the fourth day it was possible to subject him to the removal of the shoulder, which had been decided upon because the immense exposed surface destined to suppuration, the sloughing of the muscular masses

and the necrosis of the subjacent bones would probably have caused a fatal result after a severe and lingering illness, while the long time required for recovery, and the natural sequelæ of so extensive a cicatrix, would have rendered a conservation of the parts extremely unsatisfactory. It was decided to remove all of the shoulder in order that this prominence being removed, it might be possible to draw the flaps of the skin thus produced over the exposed surface and close the wound; the external two-thirds of the clavicle were sawed off and the subclavian artery ligatured directly without the scaleni muscles, the nerves of the brachial plexus divided as high as possible and the pectoralis muscle cut through; this done, the shoulder was thrown out and the scapula removed with the greater part of its muscles, leaving the skin intact; the hæmorrhage was very considerable at this stage of the operation, and, although controlled by hæmostatic forceps, difficult to manage because of the depth of the wound; permanent hæmostasis was secured with catgut ligatures; the wound was closed with deep and superficial sutures, the skin of the anterior region uniting with difficulty with that of the posterior region in spite of the enormous loss of substance; the skin of the axilla, which had been preserved to facilitate this step of the operation, was in bad condition and eventually became gangrenous along its edges; the whole operation was conducted under antiseptic irrigations and antiseptic dressings applied; great depression resulted from the operation, but the patient rallied well and improved progressively until a final complete cure was obtained in eighty-eight days. The cicatrix was 12 centimetres in length by 9 in its greatest breadth, at the point where sloughing of the axillary flap occurred. With an artificial limb, illustrated in detail, the patient is able to pursue his ordinary avocations.—*Revue de chirurgie*. July. 1886.

II. Painful Affection of the Foot. By T. G. MORTON, M.D., (Philadelphia). This affection is characterized by intense pain, referable to the head of one of the metatarsal bones, more frequently the fourth, consequent upon an accidental sudden twist or strain. It seems to be a neuralgia of one of the internal plantar nerves, which are deeply lodged in between the toes and which are liable not only to

be unduly compressed but pinched by a sudden twist of the anterior part of the foot. The treatment indicated is, in acute cases where it has evidently been induced by an injury, local depletions, anodyne applications and rest and, as in those less severe cases which do not seem to demand operation, a suitable broad-soled shoe; the greatest comfort and often entire relief is afforded by the use of a fine narrow flannel bandage, covering the anterior part of the foot moderately firmly, so as to give absolute steadiness to all the toes, and tight enough to prevent any rolling or movements of the joints or toes upon one another. In cases, otherwise beyond relief, excision of the joint of the toe insures a complete and permanently good result.—*Phila. Med. Times.* Oct. 2. 1886.

GENITO-URINARY ORGANS.

I. Digital Exploration of the Bladder. By W. T. BELFIELD, M.D., (Chicago). This paper is a collection of ten cases, including two prostaticomies, and closes with the following résumé of the essential preliminaries to a diagnostic exploration of the bladder: 1. It should not be performed as a diagnostic measure until it is reasonably certain that the seat of the difficulty is in the bladder, or until all other and less radical diagnostic means, including the microscope, have been exhausted; otherwise it may yield only disappointment and regret to both surgeon and patient. For it must be remembered that an irritable condition of the bladder can be produced by causes without as well as within this viscus, such as stricture of the anterior urethra, tuberculosis of the kidney pelvis, etc. In such cases the morbid symptoms may be exhibited chiefly or exclusively by the bladder, while the lesion lies chiefly or exclusively elsewhere. 2. The operation should never be performed until the bladder has been accustomed to complete evacuation by catheter or otherwise. If, in consequence of a tight stricture or prostatic obstruction, the bladder is much hypertrophied, membranous urethrotomy is dangerous not from a probability of urinary extravasation, but simply because a cysto-pyelitis of more or less gravity—possibly even anuria—usually follows the sudden removal of the accustomed

high pressure in the bladder and kidney pelvis. Examples are found in the daily introduction of catheters for retention, division of tight strictures, lithotomies, etc. Therefore, before the bladder is explored in a case with tight stricture, prostatic enlargement or other cause of vesical hypertrophy, the bladder should be gradually accustomed in the course of weeks, to complete evacuation; the stricture should be enlarged, or the prostatic obstruction should be overcome by the habitual use of the catheter until all residual urine is withdrawn. Then and *not till* then can the surgeon rest assured that digital exploration of the bladder from the membranous urethra, whether it afford much or little benefit, will at least be safe and devoid of injury.—*Jour. Am. Med. Assn.* Sept. 4. 1886.

II. Subcutaneous Division of Urethral Stricture. By C. H. MASTIN, M. D., (Mobile, Ala). This paper is opened by a complete historical sketch of the operations devised for the relief of retention of urine by organic stricture of the urethra. He establishes the following indications for making an artificial vent for the discharge of the contents of a distended bladder. (1) The impossibility of passing a sound into the bladder through the urethral canal, when a firm organic contraction blocks up the urethra and proves rebellious, either to dilatation or internal urethrotomy. The author has in several cases of this kind, however, cut down through the axis of the urethra into and through the stricture, although it was impassible to the smallest instrument. (2) Infiltration of urine resulting in abscess, not sudden cases where from direct injury the urethra has been ruptured and infiltration is the consequence, but those where a tight stricture has existed for a long time and a periurethral abscess has resulted from a small opening in the urethra, gradual infiltration of urine having lighted up inflammation to a degree sufficient to form a circumscribed deposit of pus. (3) Possibly in certain cases of old tight strictures complicated with urinary fistula through which a great part of the urine escapes at every act of micturition. (4) The most important indication is the rupture of the urethra by a violent blow, when the effects of the injury

are rapid and severe, where enormous extravasation of blood occurs immediately and retention takes place, the whole cellular tissue becoming infiltrated with urine. (5) Where a stricture has been formed as the result of a direct injury done to the urethra. (6) A large calculus impacted in the urethra behind a stricture. (7) When extravasation of urine has occurred from sudden rupture of the urethra and in a short time extensive sloughing has taken place from infiltration of urine into adjacent loose tissue. Where the stricture is at all permeable, the author believes an internal urethrotomy to be always possible and preferable.

After the discussion of the various methods of urethrotomy, he describes the operation devised by himself and based upon the old method of *la boutonnière*. The patient, being duly prepared by opening the bowels freely with an enema and by a hot hip-bath to tranquilize the nervous system, is placed upon the table in the ordinary cystotomy position and anæsthetized. The tube of Beniquè, a plain silver tube, open at both ends, about 9 mm. in diameter and from 6 to 8 inches in length, is passed down the urethra; this tube protects the walls of the urethra and puts the face of the stricture on the stretch. The tube is now filled with a bundle of small filiform whalebone bougies, which are carefully passed down to the stricture: by trying first one and then another, it is possible that one may engage the opening and pass into the stricture. This being accomplished, the disengaged probes are removed together with the tube and, after securing the probe in the bladder, a Wheelhouse staff, drilled through the end is carried down over it to the stricture and held firmly against the coarctation by an assistant, while the operator opens the urethra in the groove of the staff, making an incision about half an inch in length. The staff is then drawn outward just sufficiently to enable the whalebone probe to be found as it passes through its end and on into the stricture; this is secured by passing a small blunt hook behind it, after which the staff is removed entirely from the urethra and the distal end of the probe drawn out through the little wound which has been made; now over the probe is passed a little gorgeret; this has its blade directed upward and, being run along the probe as its guide, it passes through the opening into

the urethra and down the stricture, which is cut on its superior face. A catheter is now passed along the entire urethra into the bladder and the urine is evacuated, after which any bands remaining are cut with the retrograde urethrotome of Civiale. In case the introduction of a whalebone probe is not possible in the first instance, a modification of the "Leeds" operation is used, the grooved staff being carried down to the stricture and the urethra opened just above it; through the stricture thus brought into view, a probe-pointed director is pushed, and over it the little gorgéret is passed as in the preceding case; thus the operation in either case is virtually an internal section. The parts are washed antiseptically, the lips of the wound coaptated and held by pin-sutures, the sound withdrawn and its place occupied by a full sized catheter passed down to the prostatic urethra, but not into the bladder; when urination is necessary, it can be pushed into the bladder and afterward drawn back; this is used only from twenty-four to thirty-six hours, just long enough to insure the protection of the wound from the passage of urine until it has been in a measure glazed over and the strictured portion softened up by the presence of the inlying catheter; the pins are withdrawn on the fourth to sixth day and the patient soon after allowed to get up, resuming his former vocations within eight to ten days, a total cure being obtained in from eight to twelve days. The advantages of this operation are the short period of confinement for the patient, freedom from hemorrhage, quick union by primary adhesion and the small amount of resultant cicatricial tissue, which is always deposited in greater proportion the longer the healing process continues.—*Proceedings Am. Surg. Assn.* 1886.

J. E. PILCHER, (U. S. Army).

III. On the Choice of Operations for Extraction of Vesical Calculi (*sectio perinealis, sectio alta*). By Prof. KÖNIG (Göttingen). It is an old experience that new curative methods, successful in a few cases, may for a time quite overshadow old and accepted methods. Not infrequently they as rapidly disappear, leaving scarcely more than their names. The history of nerve-stretching furnishes a very recent example. Operations on the bladder have had a similar

experience. Bigelow's operation displaced bloody methods for a time. Then this was thought to be contrary to the principles of antiseptis. Now, owing to Browne & Garson's experiments and Petersen's application of their principle to cystotomy, the question is as to the superior or inferior incision. The speaker, as referee (?) on the question proposed by last year's congress, sought first to deduce from his own experience the limits for *sectio alta* and *s. perinealis*. Proceeding on the basis that the choice between two operations having the same object depends on two factors: danger to life on the one hand and feasibility on the other. He was of the opinion that in case the object could be accomplished by a less dangerous operation, though with somewhat greater difficulty, this method should have the preference. In applying this principle to the two operations (*sectio alta*, *s. perinealis*)—assuming the danger from hemorrhage to be about equal—danger to life is almost nil from the perineal, whilst as yet from the suprapubic it is from anatomico-mechanical conditions not inconsiderable—septic processes of the front abdominal walls costing life in a number of cases.

His experience went to show the absence of danger from the perineal operation. Of fifty perineal incisions in the Göttingen clinic since 1876, forty were for urethral strictures. Not one of the fifty died from the consequences of the operation. Three died from their trouble; in them the operation had been made partly for curative, partly for diagnostic purposes. Excluding these there remain forty-seven median incisions without a death. The wound healed thirty-six times without interruption, although six of these had bulbous hæmorrhage at the operation. Urinary fever lasting several days occurred in eight, erysipelas in one. These results were achieved although in twenty-seven a severe purulent and eight times a stinking putrid catarrh was present. From this the conclusion can be drawn that the perineal method is almost non-dangerous, and not materially influenced by purulent and stinking urine. Still the significance of "*Bouttonnière*" is not equivalent to that of the median incision as a fore-act in the operation for calculus. His experience with operations for calculus extends to thirty-eight cases. These include twenty-two perineals with seven

deaths five supra-pubics with four deaths, and eleven stone-crushings with no death. From the twenty-two perineal lithotomies two deaths are to be deducted (1 from chloroform, 1 from ingestive pneumonia, after long chloroform vomiting). There remain five fatal cases in twenty, or 25%. The fatal cases all presented analogous conditions. The stone-trouble had lasted long, and in most of them several attempts had already been made to remove the calculus; putrid urine, very large calculi, very difficult operation. Death was preceded by fever, mental obscuracion, unconsciousness. The autopsies showed vesical catarrh, old pyelonephritis, pneumonia and fatty heart. As a rule they were old, weak men in whom the fresh infection was added to the old, and who died of septic-uræmic poisoning. The method of operating was evidently an imperfect fore-act. It made too many and tedious attempts at removal of the calculi necessary.

As to duration of cure after this operation it was—if from the fifteen cured we leave out four very severe cases—eight times completed in fifteen days. Only in one patient did the closing of the fistula last ninety days. In other cases no fistula remained. Notable is the rapid cure in children. Four boys were discharged respectively after ten, twelve, thirteen and fourteen days. One patient, from whom an elastic catheter was removed, could be dismissed in eight days. From the perineal incision itself no patient died.

The statistics of other surgeons also give very good numbers for the perineal cut, although there are no large statistics on the median operation. Werewkin had nine deaths among 147 children operated by lateral lithotomy—the last seventy-two of them without a death. The improvement was owing to improved antiseptis. Heusinger collected 222 cases with 6.7% fatal. Allarton found 9% and Benfield 5%. Werewkin reports sixteen medians with one death, Miner ten cases without a death. Lindeman (Russia) had 10-15% (?) fatal cases among forty-five operated.

The modern *sectio alta*, on the contrary, has dangers not pertaining to the perineal method. But, quite as certainly, it has greater capabilities. The danger to life results from infection of the wound in the abdominal coverings. This is shown by K's cases, whose results were

not quite so poor, since one of the four died from iodoform and the other three were old persons with enormous calculi and putrid urine. But collective statistics prove that a relatively large number of patients die from septic infection of the abdominal coverings; e. g. Garzia's ninety-four cases with 24.4% deaths. Even though we deduct, like Garzia, twelve on account of previous pyelonephritis, still a large number of cases remain which terminated fatally from the infection. Tuffier found 27% of deaths, among 120 cases, thirty-four% of the deaths being due to urinary infiltration. Meyer also had eight out of forty-one cases die from urine infiltration. Even acknowledging that the results of the operation may, owing to modern care become somewhat better as the operation is improved, it will never be possible to entirely do away with the dangers from decomposed urine.

As yet Trendelenburg's method (belly or lateral abdominal position with raised pelvis and drainage) appears to K. the safest, though not universally available (e. g. not in old, weak subjects). This is most likely to avoid urine infiltration. On the other hand suture, though without doubt the most ideal method, is for the present unsafe, and in certain persons (very fleshy) scarcely available at all. It is evidently least serviceable where its use would be most desirable, i. e., where the urine is very putrid.

In forty-one cases collected by Meyer, the suture did not hold in seventeen, and eight died of wound sepsis. Where it is desired to remove a large foreign body the serviceability of the *sectio alta* is certainly greater and the method relatively less dangerous.

Calculi in diverticula may be more approachable from in front.

Finally he expresses himself very favorably over crushing—but asserts that it is an art and one not learned by every one. A brief sketch of each case closes his article.

DISCUSSION.

W. ROSER (Marburg) spoke of two cases (one operated by G. Simon) of calculi in diverticula operated by the perineal method. Both died from cystitis—owing to prolonged manipulation. In one of these all the fragments could not be extracted. The high operation might have

saved life and, moreover, in Simon's case the large polypoid prostate lobe, which was such an impediment, might also have been cut off from above with scissors. In a third case, opened from above, the patient died from a diverticle abscess. From a series of cases R. has found that *union and cicatricial contractions do not occur as long as the urine is alkaline*. The alkalinity can not always be overcome or, at least, in kidney stone and pyelitis it always recurs. Acetic acid irrigations are here more effective than boracic acid.

EBERMANN (St. Petersburg) operates usually by the lateral method, and especially in children from 3 to 12 years with good success. Of three cases in patients of 75 years, two died from previous exhaustion. Taking all his cases, without any classification as to age, complications, etc., his mortality was 1 to 7, or 14.3%. Thompson's collective lateral operations show 1 to 8.2. The best results of both T. and E. are between 6 and 11 years. At the first congress of the Moscow-St. Petersburg Medical Society Prof. Ssinitzin of Moscow reported 154 lithotomies in eight years with seven deaths (1 to 22, or 4.5%); ages, 13 months to 56 years. Ebermann's results in patients under 60 were about as favorable. Sterility as a result he considered a bugbear.

In several cases in the last three years E. had done the median operation—no bad result. Wwedensky, of Moscow, reported 237 own cases at the Petersburg Congress with mortality of 6%, or 1 to 14.22. (Allar-ton found 1 to 11).

MININ (St. Petersburg) and E. have collected fifty-three cases of *sectio alta* with suture of the bladder—nine of these fatal, four from infiltration. Willy Meyer (ANNALS, vide, vol. ii, p. 84) had collected forty-six.

A. SCHMITZ, at the Petersburg Congress, discussed results from the Oldenburg Children-Hospital in St. Petersburg. In the fore-antiseptic period mortality was 1 to 1.8 (*sectio alta*), since then 1 to 5.7 cured. Ebermann, Pawlow and Prof. Lucin have each operated (once, presumably, Lucin's case was one of traumatic rupture of the front wall of the bladder) by stitching the bladder wall to the external wound for five days, or until plastic union of the abdominal wound was certain.

E. advocated lithotripsy, especially where the patients came early

to the surgeon. He had employed it twice successfully in 5-year-old children. He had thus operated stones up to 70 grms. Severe vesical and nephritic troubles caused the worst results. His collective lithotripsy cases gave better statistics than any cutting method—Ssinitzin's results excepted.

Thompson's lithotripsies, 422, deaths 32, (1 to 13)

Keith's " 118, (1 to 16.5)

Ebermann's (1 to 12.8)

Lithotripsy is contraindicated in very hard and very large stones, or where they are in diverticuli, also where the bladder is very irritable or quite paralyzed; also in very narrow and extensive organic strictures. Lithotomy is preferable in severe suppurations of the urinary tract. The median perineal is the least bloody operation, but where the stone is very large and quite fills out the bladder, where it sits in a diverticulum, or where the prostate is greatly hypertrophied, the suprapubic is preferable.

V. BERGMANN (professor in Berlin), considered litholapaxy justified in soft and fragile calculi. The dangers attributed to the suprapubic operation he did not acknowledge in full. The perineal incision is not without danger from hæmorrhage and easily developing pelvic cellulitis incident to cutting the prostate. He had performed nineteen *sectio alta* and only one had perivesical cellulitis develop—the patient recovering. One only died, from hæmorrhage from an ulcer of the stomach. He believed pelvic phlegmon could be avoided by suture of the bladder. He does not usually include the vesical mucous membrane; plugs the abdominal wound with iodoform gauze for a week. In one-third of his cases the bladder-wound reopened (?); in the remainder the suture held the first three to eight days.

Relapses may occur after litholapaxy and perineal extraction, especially if crushed before removal—hence where pyelitis and pyelonephrosis are present *sectio alta* is to be performed, since then all the calculi can be removed. Later on Von B. again urged *sectio alta*, with suture of bladder; infectious urine is thus kept away from wound for a few days—when it can do no more harm.

Prof. TRENDLENBURG (Bonn) favored *sectio alta*. Since the six suc-

cessful cases published by W. Meyer (T.'s assistant) he had performed it four times; three of these—æ. 7, 27 and 64 respectively—were cured. The fourth, a man, æt. 72 died at the end of eight weeks. The man had used the catheter for ten years (very large prostate). He removed forty-two large calculi and cut away the large prostate lobe. After progressing well a sinking abscess developed from the remaining fistula. T. was satisfied with his method; the rectal balloon could be dispensed with; peritoneum was never injured.

VOLKMANN (with König) separated simple "Bouttonnière" from cases with incision of prostate. In over 100 cases of the former—majority children—he had never seen pelvic phlegmon. Only two died directly from the operation, one from hæmorrhage, one from sepsis.

SCHUDE stood by the median perineal—four cases, mostly in elderly people. To stop hæmorrhage he sews the urethral edges to the external skin. He dilates the pars prostatica with Hegar's uterine dilator, and for some days leaves finger-thick T drainage tube for daily washing out with bor-water. Only one case of urine infiltration and death; others took good course.

SCHONBORN (Königsberg) considers litholapaxy the normal method in small calculi, but the median perineal for foreign bodies. With the improved evacuators recurrence can be avoided, if the bladder is again examined after one or two weeks and later three or four times a year, thus allowing for remaining fragments, gravel from kidney, etc.

SONNENBURG (Berlin) favored *sectio alta*. Amongst its disadvantages, however, if a urinary fistula remained it withstood all attempts at cure. This S. has seen twice the last year. In one of these the bladder had been sutured, in the other—urine being alkaline—not. In the first case urethrotomia externa was done for permanent drainage of the bladder, whereby two small stones were removed, one containing a silk suture. The patient soon died. Bladder and peritoneum were medially firmly adherent to the abdominal wound; an abscess cavity with discolored pus in the *cavum Retzii* behind the symphysis, with a direct communication externally and very indirectly with the bladder. S. told of another case, like one of Tiling's mentioned in Kramer's article, where the peritoneum was bound to the posterior surface of the

symphysis. The peritoneum was cut but immediately sewed up and freed from the symphysis when the bladder was opened; cure without interruption.

ISRAEL (Berlin) had also seen the peritoneal fold adherent to the symphysis, and found from investigations on the cadaver that ballooning the rectum did not always push up the fold of peritoneum. In a case of fistula of five years duration Is. made transverse opening above the symphysis, cut away the fist-sized cicatricial tissue and stitched (sewed up) the bladder. Cure only interrupted by some passage of urine through wound on fourth day. In a case of vesical tumour and putrid urine, stitching the bladder wall to the abdominal, turned out well.

Volkman casually characterized *sectio alta* as more dangerous than ovariectomy.

GUSSENBAUER (Prague) related a case of fistula after epicystotomy. Primary union of the sutured bladder; on removal of the silk sutures two weeks later they were found much incrustated. Temporarily the fistula would heal, then break out again. Treatment in vain by Von Dittel and Hofmohl. G. incised the bladder without finding anything abnormal, but with achievement of subsequent cure. G. favored litholapaxy. Contraindications for this and the other operations like the previous speakers. Median operation for children and small calculi, lateral lithotomy for larger calculi in fat persons. For enormous stones, etc., the suprapubic. He had once found the peritoneum adherent to symphysis; it was accidentally injured after having been prepared off; death from peritonitis and severe pyelonephritis. In another case the size of the stone (completely filling bladder) compelled him to sever the mm. recti abdom. at their insertion—cured. In a third case he found six stones, one in a diverticulum—slow cure.

KUSTER (Berlin) remarked that complete digital examination of the bladder was not possible in all cases through the perineum, so that in three cases he had had to add *sectio alta*. He thought none of the operations could be dispensed with.

PETERSEN (Kiel) pointed out that recurrence of stone might not be the fault of operator or method, e. g., might come down from kidneys.

Some evils might result from his method of rectal distention—atony of intestine and coprostasis, bursting of rectal wall from overdistension. In a *sectio alta* from 1876 the cicatrix broke open several times, but finally was secured. He thought one cause of fistula might be the union of abdominal before vesical wound.

He was returning to litholapaxy—one case with cocain-anæsthesia.—*Original Abstract in Centbl. f. Chir.* 1886. No. 24.

IV. Modern Modifications of the Operations for Calculus. By Dr. KRAMER (Göttingen). (Introductory review to König's article). Refers to Bigelow's operation and the skill it requires.

Lateral lithotomy has been practically given up in Germany; in Russia still frequently practiced, especially on children.

(a). Tett (Maas, *Deutsche Gesell. f. Chirg.*, 1885) 106 cases of all ages, with 3 deaths and 3 recurrences.

(b). Grube (Charcow, *Ref. in Centbl. f. Chirg.*, 1882, No. 49, P. 799) 40 cases, with 3 deaths (2 from kidney affections and 1 from sepsis).

(c). Werewkin (*Centbl. f. Chirg.* 1885, No. 8) 147 cases, with 9 deaths, besides 3 from accidental diseases. Amongst his last 72, however, no death. (10 had balano-posthitis, 9 erysipelas, 2 orchitis, whilst of the 135 cured 7 had a fistula and 2 incontinence of urine).

Sectio mediana (Boutonnière, with dilatation of urethra and sphincter vesicæ). He simply mentions former statistics of Hensinger, Benfield, etc., which gave a mortality of 5% to 9%. More recent collections are: Werewkin (l. c.) 16 cases in children, with 1 death and 1 fistula; Miner (*ref. in Centbl. f. Chirg.*, 1882, P. 789) 10 cases of all ages with good result; Maas, 1 death from uræmia (amongst ?); Kinde-mann Russia, (Magdeburg *Naturforsch. and Aerzte Versamml.*) in three years, 45 cases, with 10 to 15% mortality; Helferich (*Munich Mûch. Med. Woch.*, 1886. Nos. 9-11) had 1 death from sepsis in 11 cases, and A. Schmitz (*Arch. f. klin. Chirg.*, Bd. 33, P. 482) 2, deaths (peritonitis, pyelonephrosis) and twice fistula among 14 cases.

Recently a portion of the German and French surgeons, as also Thompson, have turned more to the suprapubic. Von Dittel's indications (*vide ANNALS*, Oct., 1885). 1. In very large stones where the

bladder spasmodically encloses the stone so that no itinerarium can be introduced between. 2. Where the stone projects pipe-like into the urethra. 3. Where calculi are so imbedded in diverticula, that they can not be expressed. 4. In stones of such hardness that they can not be crushed. 5. For foreign bodies that can not be broken up nor extracted. 6. In co-existent ankylosis of one hip.

Albert (Lehrbuch, 1885) and Garcin (Strassburg, 1884), have accepted these indications, the latter adding prostatic hypertrophy, stricture of the urethra, "irritable bladder," and material alterations in the kidneys.

Milliot (Medic. Congress of Lyon, 1875), achieved upward displacement of the bladder by injecting air into the rectum. Braune and Garson, 1878, followed with corroboration as known. Then Petersen, 1880; Mannheim, 1884, and Fehleisen.

Balloon in the rectum failed in one case of Janischewski, owing despite deep narcosis to cramp of the sphincter ani as claimed.

In a very few cases the peritoneum has been opened (Lister, Werewkin (?), Howe, one mentioned in the discussion.

The proposition of Vidal (also Langenbuch, Albert, Monod) to divide the suprapubic operation into two operations does not seem to have been practiced. (Purpose of this was to avoid infiltration of urine).

Since W. Meyer's statistics of 41 cases of suture of the bladder (vide, ANNALS, July, 1885) a large number of such cases has been published. The plan has been given up by the majority unless in exceptional cases, and drainage through the bladder wound substituted.

Statistics of the suprapubic operation in its modern form have been collected by both Garcin and Tuffier (T. Annales des Mal. des voies urin. 1884. June. Garcin's list amounted to 106 cases. Of 94 cases for stone or foreign body, 23 died (12 of pyelitis, erysipelas, etc., 7 from urine infiltration of which latter in 5 the bladder had been sutured). Amongst his 27 cases, between 10 and 20 years of age, but 1 died.

Tuffier gives 120 cases with 27% deaths. Some operators employ this method in nearly all cases, whilst others have recourse to it only in very difficult ones, thus yielding uneven results.

Von Bergmann (1884) 10 cases with no deaths.

Trendelenburg (cf. W. Meyer, above) 6 cases, all cures.

E. Böckel (cf. Garcin) 3 cures and 3 deaths.

Mikulicz 3 cases, one dying from pneumonia.

V. Dittel 8 cures and 5 deaths,

Thompson 6 cases, 1 dying from exhaustion.

Von Iterson 12 cases, no death.

In France 19 with 5 deaths, but only 1 (?) from the operation.

Werewkin 24 children, 7 deaths (from peritonitis).

Makawejew (Ref. in Centbl. f. Chirg., 1884) 11 cases with 2 deaths.

Tiling 4 cases, no deaths.

In several of the above cases a very intractable fistula remained.—

Arch. f. klin. Chirg. 1886. Bd. 34. Hft. I.

W. BROWNING (Brooklyn).

ULCERS—ABSCESSSES—TUMOURS.

I. The Subiodide of Bismuth in the Treatment of Ulcerations. By A. SIDNEY REYNOLDS, M.D., (Philadelphia). The subiodide of bismuth would seem to unite the properties of iodine and bismuth; the former acts upon granulation tissues, inducing an increase of all normal physiological processes, producing a protoplasmic energy ordinarily obtained only by congestion, hyperæmia or inflammation, and induces a reversion of the tissues to an embryonic state; it imparts a formative influence or force to the cellular elements of the three germinal or blastodermic layers and their derivatives, closely approximating the laws of normal development; its specific action in certain dyscrasiæ and its antiseptic power, inhibiting germ development in the proportion of 1 to 4,000, add to its efficiency. Bismuth unites with the albumen, forming an albuminate, which acts as a sedative, aseptic, impermeable coating on the granulations, retarding the evaporation of the cellular moisture, modifying the formation of a striated connective tissue from the gelatinous intercellular substance, and prevents the retrograde metamorphosis of the white blood corpuscles. Summarizing the physical and therapeutic properties of the subiodide, it may be said that,

a. It subdues the inflammatory process.

b. It substitutes the inflammatory regeneration of tissue, with a neoplastic force, which closely simulates normal embryonic histogenesis.

c. It is by its action a vital antiseptic, supporting life, promoting nutrition and maintaining the integrity of the tissues.

d. It prevents the formation of pus.

e. It lessens direct and reflex irritability.

f. It is so bland and unirritating that it can be used on any surface.

Under the use of subiodide of bismuth, ulcers, which usually heal by cicatrization at the rate of one-half to one line per day, have been seen to dermatize at the rate of three to five lines per day; the cicatrix is fleshy and firm, and is but little disposed to destructive inflammations or subsequent alterations even over syphilitic sores. Certain ulcers of particular origin may require some radical or specific treatment to convert them to simple forms of ulcer or to remove pathological elements, which would retard healthy tissue formation. The dressing is applied as a dry powder.—*Med. News.* Oct. 9, 1886.

II. The Incision, Digital Exploration and Drainage of Lumbar Abscesses.—By EDMUND ANDREWS, M. D., (Chicago, Ill.). From a pretty extensive experience in the various methods of treatment of lumbar abscess, which have been in vogue, the writer concludes: 1. Some lumbar abscesses recover simply by a series of aspirations, with or without antiseptic washing out. This method is simple and, where the choice offers itself, should be tested first. 2. If the aspiration plan fails, or is inapplicable in consequence of the abscess being already open, then free incision, exploration and complete disinfection should be carried out at once. 3. If residual abscesses appear in the course of the treatment, they should be served in the same way as the primary one. 4. The sudden evacuation of a large cavity, filled with pus, provided the sac is immediately disinfected and kept so, has none of the dangers supposed by the old authors to beset the case. The steps of the operation vary with the locality. When the abscess points in the lumbar region, the original focus is almost always inside the body, but behind the peritoneum, a small orifice at the outer border of of the common mass of the *erectores spinæ*

muscles, conducting the pus outward to another broad sac which expands under the integuments. In this case, not only the outer focus must be exposed, but the inner one must be explored through the connecting opening, usually found in the groove just outside the border of the common mass of the erector muscles, but sometimes lying in the angle where the crest of the ilium approaches the skin. Necrosis and caries are to be treated as elsewhere. When the abscess points above Poupart's ligament, it presses away the peritoneum so that there is usually no danger in opening it a little above the ligament and in front of the superior spinous process of the ilium; if below, a free incision is made, to admit the finger. The course of the sinus is to be traced with a sound and the focus then opened in the lumbar region, the abscess evacuated, the cavity thoroughly explored for dead bone with the finger and probe and treated by antiseptic irrigation. The paper is accompanied by the recitation of nine cases, in which the author operated by this method, of which four pointed in the lumbar region, one in the outer side of the left thigh and three about Poupart's ligament, while one was an iliac abscess which pointed in the lumbar region. Of these five were simple abscesses and four the result of Pott's disease. All the cases were doing well as long as they could be kept under observation, except one, in which the system had become thoroughly infected before the operation, and who died of a cerebral attack caused probably by septicæmia.—*Jour. Am. Med. Assn.* October 23, 1886.

III. Fibro- or Spindle-celled Sarcomatous Tumours. —

By B. A. Watson, M. D. (Jersey City, N. J.). Opening with a general discussion of these tumours, giving a detailed account of their macroscopic and microscopic appearance, the writer notes the great importance of the differential diagnosis of sarcoma and carcinoma of the breast, which he tabulates as follows:

FIBRO-SARCOMA.

1 Commonly develops very slowly, especially at first; may remain stationary for years.

2 Rough, lobulated or lumpy; lump may be as large as a hen's egg; tumour finally attaining great size and becoming pedunculated.

3 Skin involved after a long interval; morbid growth approaches the integument, which is gradually thinned as by an abscess, and also frequently marked with large veins.

4 Nipple does not retract and is not often changed in appearance.

5 Ulceration occurs after the lapse of a long period; skin gives way, owing to pressure on its internal surface by the lumps, which belong to the morbid growth, but the ulcerated border of the integument is thin, loose and not adherent to the tumour.

6 Consistence of the tumour varies in the different stages of the disease; first hard, later soft spots may be found, and even liquid parts from the cysts within it.

7 The mammary gland remains distinct from the tumour; consequently it is not destroyed, but simply flattened and atrophied.

8 Sarcoma does not become adherent to the deep seated parts.

9 Does not involve the lymphatic system in the early stage of the disease, and rarely even in the late.

10 The morbid growth returns in the majority of cases, commonly in the same organ, and these relapses indicate a finally fatal termination of the disease.

11 The general health of the patient often remains quite satisfactory, even after the tumour has been removed several times.

12 The progress of the disease is rarely attended with much pain.

CARCINOMA.

1 Commonly develops very rapidly and may terminate fatally within a year.

2 Slightly roughened; no large lobules tumour usually small and flattened on the chest.

3 Skin becomes quickly attached to the morbid growth, is retracted, drawn in, thus giving rise to the appearance of a quilted cover; large veins not seen, but in their stead there may be observed white lines, sometimes called lymphatic varices.

4 Nipple retracts and its end seems to be absorbed.

5 Ulceration occurs at an early date; skin is invaded by the morbid growth and destroyed; border is thickened, hardened and adherent to the tumour.

6 Consistence of the tumour never varies in the different stages. Generally firm.

7 This morbid growth from the first fuses with the mammary gland and soon destroys it.

8 Carcinoma adheres quickly to the deep seated parts, especially the pectoralis muscle.

9 Involves the lymphatic system in the early stage of the disease, which is always steadily progressive.

10 The morbid growth will surely and speedily return; usually in some other part of the body and a fatal termination rapidly supervenes.

11 The general health is quickly impaired, the cachexia becoming very marked in the early stage of the disease.

12 The progress of the disease is attended with severe pain.

Referring to the difficulty of diagnosis of these tumours in general

he remarks that it can not be based upon any pathognomonic sign, but by carefully weighing the symptoms as a whole, and even this in many cases does little more than supply a serious presumption. The prognosis is very grave because of the steady progress of the disease toward a fatal termination, either by general contamination of the system or local organic disturbance of important vital functions. The treatment is necessarily entirely surgical at the earliest possible moment, removing every particle of the tumour, not leaving a single morbid cell. The paper concludes with a report of a case of operation for spindle-celled sarcoma of the thigh, through the lower one-third of the lower portion of which the sciatic nerve passed, grooving deeply the upper two-thirds of its posterior surface. Some traction was made on the nerve, while liberating it from the tumour, it was slightly incised at one point, and was completely detached from all surrounding tissues throughout the entire length of the tumour. The operation was done under strict antiseptic precautions, but was followed by rapidly extending gangrene of the limb, inducing death after thirty-four hours. The writer considered the gangrene and vaso-motor disturbances to be due to the involvement of the nerve in the morbid growth and its removal.—*Jour. Am. Med. Assn.*, Oct. 16, 1886.

BONES, JOINTS, ORTHOPÆDIC.

I. Backward Dislocation of the Finger upon the Metacarpus. By E. O. OTIS, M. D. (Boston). Having observed a case of irreducible dislocation of the finger upon the metacarpus, the writer's attention was attracted to the general disregard of the difficulty of reducing these luxations, and the paper, based upon experiments upon the cadaver and a study of the observations of Jalaguier (*Arch. Gen. de Méd.*, Feb. 1886), is the result. In backward dislocation, the finger is brought into extreme extension, which produces a rupture at the weakest point in the joint, *i. e.*, at the metacarpal attachment of the thick, dense and fibro-cartilaginous anterior or glenoid ligament of the metacarpo-phalangeal joint; the head of the metacarpal bone escapes through the rent, and the phalanx, with the torn ligament hanging to it,

ascends the dorsum of the metacarpal bone; at the same time, the anterior fibres of the lateral ligaments are torn through. Schüller says these are not necessarily ruptured, but the writer's experiments would seem to show the contrary. The dislocation being complete, the anterior part of the articular face of the phalanx rests upon the neck or dorsal surface of the metacarpal bone; it is held there by the flexor tendon, deviated within by the extensor tendon, which raises the skin, and by the remnants of the lateral ligaments: the glenoid ligament, which has followed the phalanx, is in contact with the head and dorsal surface of the metacarpal bone; its palmar surface has become dorsal and corresponds to the anterior face of the dislocated phalanx with which it forms an angle opening below; its articular face rests upon the neck or even upon the dorsum of the metacarpal bone. Such being the disposition, the glenoid ligament must be brought into its place, and this can only be done by using the phalanx as a lever and pushing before it the ligament which followed it in the act of dislocation, the technique being as follows: Carry back the phalanx in forced extension, keeping its base closely applied to the dorsum of the metacarpal bone, then slide its articular surface upon the dorsum of the firmly fixed metacarpal bone, until it reaches the head of the latter, and finally flex the phalanx, when the reduction ensues. Extension in a flexed or straight position, although it may be successful, incurs the danger of making the dislocation irreducible. If the method of dorsal flexion fails, the dislocation is probably what Jalaguier calls a complex one—the glenoid ligament being reversed and interposed between the two articular surfaces—a condition rarely primary, but due to traction made upon the flexed phalanx. In this condition there is a bare chance that the glenoid ligament may be disengaged and the dislocation changed to a simple one by using the method of dorsal flexion to an extreme degree; the phalanx must be carried, if possible, beyond and behind the torn metacarpal border of the glenoid ligament, and so establishing the immediate contact between the articular surface of the phalanx and the dorsal face of the metacarpal bone; then the phalanx can be carried forward, pushing the ligament before it, and finally flexed. This failing, dorsal subcutaneous section of the glenoid ligament is the last

resort; the only instrument required is a strong tenotome with a short blade and a rather blunt point. The landmarks for the index finger are the posterior border of the glenoid cavity of the phalanx, easily felt on the dorsum of the hand, and the extensor tendon. The exact situation of the dorsal face of the metacarpal bone must also be determined in its relation to the phalanx, to see if the two bones are in the same axis, as they should be in order that the middle of the glenoid ligament may lie upon the middle of the dorsal face of the metacarpal bone; the exact position, antero-posteriorly, of the phalanx does not make so much difference, but the two bones must be in the same axis—perhaps the best position of the phalanx being that of an obtuse or nearly right angle with the metacarpal bone. In the thumb and when a sesamoid bone exists in the index finger, it must be avoided. The tenotome is to be entered about two centimetres behind the base of the phalanx and immediately outside of the extensor tendon, being kept flat upon the dorsum of the hand; the knife is glided under the integument until the articular surface of the phalanx is reached; then the handle of the knife is raised so as to lower the point and, bearing down hard upon the dorsum of the metacarpal bone, the section of the glenoid ligament is made by withdrawing the tenotome about a centimetre. In some cases it is not necessary to incise the whole extent of the ligament, a small nick upon its torn edge seeming to be sufficient to allow the head of the metacarpal bone to slip into place, if reduction does not immediately and easily follow, the knife may be entered again and the operation repeated, some portion of the glenoid ligament having perhaps escaped incision in the first attempt; antiseptic precautions should be used and the digit immobilized after the operation.—*Boston Med. and Surg. Jour.*, Sept. 2, 1886.

JAMES E. PILCHER (U. S. Army).

GYNÆCOLOGICAL.

I. Intoxication with Corrosive Sublimate in Case of Laparotomy. By Dr. KUERMELL (Hamburg). The numerous reports, which have appeared from time to time, of cases of intoxication occurring after the use of corrosive sublimate for disinfectant purposes

during larger operations, have had the wholesome effect of introducing the employment of less concentrated solutions. Such cases are nowadays rarely heard of. When they do occur the cause may generally be found in special conditions present in the affected individual. Author had among his first 170 larger operations, where a concentrated solution (1%) solution was employed, but one case with slight symptoms of intoxication. The results in some 900 operations since then, have been uniformly satisfactory. He has never observed in any of these symptoms which could denote a too liberal employment of this disinfectant, although many of the patients were children and individuals with greatly reduced strength. Author does not use the carbolic spray. The smooth walls of the operating room are thoroughly scrubbed with soap and water the day before the operation. The operating table is also well scrubbed and washed off with a 1% solution of corrosive sublimate. Nickel-plated instruments, made either in one piece or having nickel or copper-plated handles, are employed. These are heated to 150°, R. in an oven for one and a half hours before the operation, and are placed warm in a 5% solution carbolized water. The sponges, thoroughly cleansed, are kept in a 1% solution of corrosive sublimate. They lie during the operation in a warm solution of the sublimate, 1.0: 5-6,000, and are well pressed out before using. Sublimate catgut is used for sutures, ligatures, etc. The abdomen of the patient is thoroughly cleansed with warm water, soap and ether, and also with a 1% solution of the sublimate, as are also the hands of the operator and his two assistants. Under these antiseptic precautions the author has obtained the most gratifying results in some nineteen cases of laparotomy, until the two following cases of intoxication occurred, a short time since:

Case I. Patient, æt. 30. Highly anæmic condition. Menses regular. Several normal confinements. For two years past profuse menses lasting for long periods. Increase in size of abdomen for six months past. Examination reveals the presence of an uneven movable tumour of the uterus, about the size of a child's head. Diagnosis, myoma uteri. Operation under above described antiseptic measures. After laparotomy had been done and an elastic ligature passed around

the neck of the uterus, the tumour was excised. Uterus closed with three rows of sutures, the peritoneum being sewed separately. Operation lasted $1\frac{1}{4}$ hours. Pulse strong and full, 80. During the same day and the night following vomiting several times. The next day slight elevation of temperature; pulse 80. Abdomen relaxed and painless. No vomiting. Several stools. During the night and following day stools mixed with blood. Gums somewhat swollen, no ulcerations. Temperature on the third day about the same, pulse 104. Abdomen painless. Collapse. Death early on the morning of the fourth day after operation. Autopsy showed that union of the wounds was progressing well. In the ascending colon several defects in the mucous lining with sharply defined edges. Between these were groups of ecchymoses. Otherwise nothing abnormal found.

Case II. Patient, æt. 25, anæmic in appearance, has always been healthy. Menses regular. Four years ago normal confinement. For past six months pains in abdomen, due to prolapse of posterior wall of vagina and displacement of uterus. These disappeared on the introduction of a pessary. Examination revealed the presence of a tumour about the size of an orange, evidently attached to the right ovary. For past six weeks very rapid increase in size of abdomen. Menses continue regular. Largest circumference of abdomen 102 cm. Operation. On opening the abdomen a large encysted ascites found, caused by a large papilloma of the right ovary. Excision of tumour and ovary. Left ovary being also diseased, was excised. Patient rallied well after operation. Some vomiting during the day. Pulse 84, strong and full. The same evening great collapse. Patient restored with subcutaneous injections of ether and camphor. Following morning great weakness, pulse 160. Abdomen relaxed and painless. No vomiting. Bloody stools. Infusion of 1,500 grammes of a 0.6% solution of sodium into the basilic vein. Pulse became stronger, and its frequency sank from 160 to 120. The next day the threatening symptoms had subsided. Bloody stools for several days. Gums swollen and ulcerated. Complete recovery.

The clinical symptoms in both these cases, namely the moist tongue, the relaxed and painless condition of the abdomen, the absence of all

symptoms of peritonitis, the slight frequency of pulse in the presence of bloody stools, and furthermore, in the first case, the results of the autopsy, all point to intoxication with the sublimate, not to sepsis. The anæmic state of the first patient was undoubtedly, to a great extent, the cause of death, a small quantity of the toxic disinfectant being sufficient to fatally impair the reduced organism. Author concludes, however, that solutions of the sublimate of 1.0 : 5-6,000 may be used without fear in cases where the strength of the patient is not too greatly reduced. In anæmic individuals, however, and in those suffering with kidney affections, it will be advisable to forego the use of this means of disinfection entirely.—*Deutsch. Med. Wochen.* No. 34. Aug. 26, 1886.

II. Two Cases Cæsarean Section. Sutures of Catgut Prepared in Chromic Acid. Recovery. By Prof. LEOPOLD (Dresden). Author has operated eleven times before, using mostly strong silver wire for the deep, and the finest silk for the superficial sutures. Experiments with catgut prepared in Juniperus oil (Kocher, Küster) and in chromic acid (Mikulicz) encouraged him to try both kinds for sutures in cases of laparotomy and plastic operations. The results were entirely satisfactory, sutures of catgut prepared in chromic acid, holding well for fourteen days, in cases of abdominal wounds. In the two following cases (his XII and XIII) sutures of this latter kind were employed.

Case 1. Multipara. Three dead children. High degree of flattened, rachitic pelvis. Conjugata vera $6\frac{1}{3}$ cm. Patient, æt. 24. Labor began July 4, P. M. First cranial position (a). Following morning at 11 o'clock, rupture of the waters. Head cannot enter; heart beats regular. At 4 o'clock P. M., condition unchanged. Pains very severe. Great desire for delivery. Operation at 5 o'clock P. M. Living child weighing 2,500 grammes. No fever. Discharged cured in three weeks, the uterus being easily movable and well reduced in size.

Case II. Primipara. Dwarf with rickety pelvis much narrowed and flattened. Diagonal conjugata $5\frac{3}{4}$ cm. Patient æt. 28. Uni

versal signs of rickets. Commencement of labor July 16, 8 o'clock A. M. Waters ruptured at 6:45 o'clock P. M. Operation at 8:30 P. M. Back of child on right side behind. Cervix fully distended, and a loop of the cord lying in vagina. Living child weighing 3,200 grammes.

The patient, a miserably nourished individual, had a slight hæmorrhage with somewhat quickened pulse the day following the operation. She made, however, a good recovery, without fever. In both operations the mode of procedure was as follows: After laparotomy had been done, temporary sutures were introduced into the abdominal walls. The uterus was then drawn out and a rubber tube passed about the collum and fastened with a clamp. The temporary sutures were tied at this stage, thus closing the abdominal cavity. Incision of the uterus followed and extraction of the child. After this the rubber tube was tightened or compression with the hand made on the collum. The uterine cavity was carefully cleansed of all membranes, and toilette made with carbolized sponges. Sutures of strong catgut prepared in chromic acid were now introduced for closing the uterine wound, in the first case ten, in the second case twelve being used. This latter procedure occupied, in the first case, ten minutes, in the second, sixteen minutes.

The superficial suture, which unites the serosa, should be an uninterrupted one. Author gives the following rules for the performance of this operation: 1. Complete closure of the abdominal cavity by preliminary suture after the uterus has been drawn forward. 2. Controlling of the hæmorrhage after incision of the uterus. 3. Careful cleansing of the uterine cavity. 4. Exact uterine suture. 5. Massage of the uterus to excite contraction.

When the uterus is drawn forward, a sponge should be placed underneath it, resting on the intestines. Then the temporary sutures (6 to 8 being sufficient) are tied. The incision in the uterus should reach from the fundus to the lower segment, and be made as quickly as possible.

Massage (according to Credé's method) is especially recommended after loosening the rubber constrictor. The catgut is prepared in the following manner: Coarse catgut left in a 10% solution of carbolized

glycerine for forty-eight hours, is then allowed to remain for five hours in a $1\frac{1}{2}\%$ solution of chromic acid. It should be preserved in absolute alcohol. *Deutsch. Med. Wochen.* No. 32. Aug. 12, 1886.

C. J. COLLES (New York).

III. The Progressively Increasing Mortality of the Cæ-sarean Operation in the United States.—By R. P. HARRIS, M. D. (Philadelphia). The author tabulates the operations for the last four decades, as follows:

From 1846 to 1855 inclusive,

Number of operations,	25 Children delivered alive,	13
Women saved,	12 Children delivered dead.	12
Women lost,	13	

From 1856 to 1865 inclusive, ten years,

Number of operations,	25 Children living,	10
Women saved,	12 Children dead,	15
Women lost,	13	

From 1866 to 1875 inclusive, ten years,

Number of operations,	36 Children living,	11
Women saved,	10 Children dead,	25
Women lost,	26	

From 1876 to 1886 inclusive, ten and one half years,

Number of operations,	37 Children living,	16
Women saved,	8 Children dead,	21
Women lost,	29	

While the author seems to suggest delay in operating for various reasons as the chief cause for this mortality, it would appear that the increase is apparent rather than real and due to the fact that a larger proportion of fatal cases have been reported recently than formerly—cases which formerly would not have been reported at all.—*Med. News*, Oct. 16, 1886.

ANNALS OF SURGERY

A MONTHLY REVIEW
OF SURGICAL SCIENCE AND PRACTICE

EDITED BY

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AND

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OF BROOKLYN, N. Y.,

OF LONDON, ENGL.

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Listerine comes nearer an Ideal Antiseptic than any preparation ever presented to the Medical World.

LISTERINE does not pretend to compete with cheap disinfectants for cess-pools, drains or closets, but is a superior antiseptic agent, equally adapted to internal use and to make and maintain surgical cleanliness in the treatment of all parts of the human body, whether by spray, irrigation, or simple local application.

LISTERINE has long since passed the experimental stage, and has withstood the comparative clinical tests with the many official drugs recently classed as antiseptics in the natural progress of medical theories and laboratory observations, no one of which so happily combines the above qualities as this carefully prepared formula of Benzo-boracic Acid, with Vegetable Products and Ozoniferous Essences—all antiseptics and chemically compatible.

Send for new Formula Book and General Reports from Medical and Surgical authors, establishing its value

EXTERNALLY IN Surgery, Obstetrics, Gynæcology, Leucorrhœa, Gonorrhœa, and all Mucous Membrane Catarrhs.

INTERNALLY IN Typhoid and other Fevers, Zymotic Diseases, Diphtheria, Scarlet Fever, Dyspepsia, Dysentery, Diarrhœa, and all forms of Cholera, and as a general Prophylactic.

LAMBERT PHARMACAL CO., 116 Olive St., St. Louis

In writing please mention this Journal.

HORSFORD'S ACID PHOSPHATE,

U.S.

DILUTE PHOSPHORIC ACID.

The attention of the profession is respectfully invited to some points of difference between Horsford's Acid Phosphate and the dilute phosphoric acid of the pharmacopœia. Horsford's Acid Phosphate is a solution of the phosphates of lime, magnesia, potash and iron in such form as to be readily assimilated by the system, and containing no pyro- or meta-phosphate of any base whatever. It is not made by compounding phosphoric acid, lime, potash, etc., in the laboratory, but is obtained in the form in which it exists in the animal system. Dilute phosphoric acid is simply phosphoric acid and water without any base. Experience has shown that while in certain cases dilute phosphoric acid interfered with digestion, Horsford's Acid Phosphate not only caused no trouble with the digestive organs, but promoted in a marked degree their healthful action. Practice has shown in a great variety of cases that it is a phosphate with an excess of phosphoric acid that will better meet the requirements of the system than either phosphoric acid or a simple phosphate. "Phosphorus," as such, is not found in the human body, but phosphoric acid in combination with lime, iron and other bases, i. e. the phosphates, is found in the bones, blood, brain and muscle. It is the phosphates and not the simple phosphoric acid that is found in the urine after severe mental and physical exertions, or during wasting diseases.

We have received a very large number of letters from physicians of the highest standing, in all parts of the country, relating their experience with the Acid phosphate, and speaking of it in high terms of commendation.

Physicians who have not used Horsford's Acid Phosphate, and who wish to test it, will be furnished a sample on application, without expense, except express charges.

RUMFORD CHEMICAL WORKS,

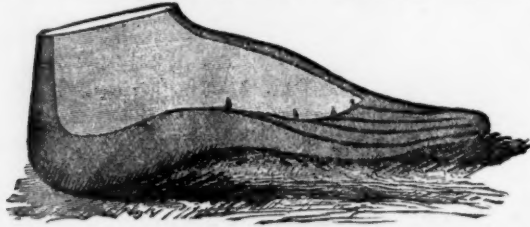
Providence, R. I.

BEWARE OF IMITATIONS.

In writing please mention this journal.

LECTURE.**Convalescent Cases.**

A Clinical Lecture by Professor LEWIS A. SAYRE,
At Bellevue Hospital, February 14, 1877.



CASE 6.—MARY CASHEN. Here is a little girl I feel proud to show you. Look at that smiling face, compared to what it was when she came here several months ago. The operation was performed three months ago. You will recollect that this girl came here with chronic disease of the knee joint, which she had had ever since she was seven months old. From the age of seven months on, she remained with her knee in a state of Chronic Inflammation. It was plastered, and issued, and fired, and iodined, and she took internal remedies all the time, until within a few weeks of the time when she came here, but she never had extension and counter-extension, to overcome reflex muscular contraction. The muscles contracted in such a way as to produce a complete luxation backward of the leg upon the thigh, so that the head of the tibia lay in the intercondylar notch.

You will recollect that the leg and foot were models of symmetry and beauty, never having been stepped upon, or never having worn a shoe. The disease had so thoroughly involved the joint, that an excision alone could not save the limb. If a resection had been performed, the leg would have been too short to walk upon, and on that account I decided to perform an amputation upon the knee-joint, leaving the patella to form the end of the stump.

Mr. A. A. Marks, the instrument maker, has been kind enough to present to this little girl an artificial leg, and I feel under great obligations to him. He makes, as I think, **ALTOGETHER THE BEST ARTIFICIAL LEG** I have ever seen, simply because of its durability and simplicity. The foot has no joint at the ankle, and this is where the great advantage comes in. The core of the foot is a small solid piece of wood in the shape of a foot, only much smaller. This core is covered with a thick layer of sponge rubber, so that from the instep to the toes, and back to the heel, the foot is simply rubber. The elasticity of the toes and heel compensates for the absence of the ankle-joint, and in walking there is none of the jarring, dot-and-go-one walk so characteristic of the jointed leg. With this rubber foot she can walk with the *Stealthy, Noiseless Tread of a Cat*. The spring and elasticity of the foot is a positive comfort to the patient. These limbs are the most natural, comfortable and durable. U. S. Government manufactured.

Illustrated pamphlet of 100 pages, containing over 300 testimonials and copyright Formula for taking measurements sent free.

A. A. MARKS, 701 BROADWAY,
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In writing please mention this Journal.

SPECIALTIES FOR USE IN**ANTISEPTIC SURGERY AND AS DISINFECTANTS.****PLAIN ABSORBENT AND MEDICATED COTTONS:**

BORATED—Carbol., Iodoform, Naphthalin, Salicyl. Cotton, and with Corrosive sublimate.

IODIZED—Hæmostatic with *Monsel's*, and Styptic, with *Perchloride of Iron*.

GAUZES: Lister's Carbol., with Borac. Acid, Iodoform, Naphthalin, etc. Hospital and Absorbent Gauze with Corr. Sblm.

JUTE: Ordinary or absorbent, plain or medicated.

LIGATURES: Silk, ordinary and braided, plain or medicated; Catgut, Lister's Carbol. and Chrom.; (Kimmel's) Kothers.

COMBINED BORATED COTTON PERMANENT DRESSINGS.

(Devised by Dr. Fr. Lange) with Lister's or Corr. Sblm. Gauze.

MARINE LINT, Oakum, Peat, Sponges, Woodflour, Woodwool, etc.

SURGICAL DRESSING CASES

containing a complete outfit of dressing material for out-door practice.

C. AM ENDE, MANUFACTURER,

HOBOKEN, N. J.

Fluid Forms of Hydrastis.

The reputation of this drug as a therapeutic agent was first gained, through its employment in the form of an *infusion*; and in the fifty years following its introduction into medical practice, a continuous effort has been made by manufacturers to perfect a preparation which would represent all the active principles of the drug, without the high price of the salts, either alone or in combination.

The most prejudiced writers on *Materia Medica* accord to the late Wm. S. Merrell the largest share of credit in the introduction of Hydrastis preparations, and to the present organization the reputation of being the *largest consumers of the drug in the world*. For more than a half century Hydrastis has been made a study in our laboratory, and we do not think we exaggerate its importance when we assert that it stands pre-eminent to-day as the most valuable exponent of our vegetable *Materia Medica*.

The following preparations in *fluid form* are receiving our special attention at this time:

Fluid Hydrastis—MERRELL.

Is what its name implies—the active medicinal principles of the drug in natural combination and in a fluid form. It has a bright yellow color, perfectly clear, free from sediment, and with an unmistakable odor of the *fresh drug*.

Fluid Hydrastis is a pure, neutral solution of all the alkaloidal constituents of the drug, rejecting the oil, gums, irritating and offensive resins, and inert extractive matters. The success attending its introduction is the best evidence of its therapeutic value.

Unsuccessful imitations and would-be substitutes are met with on every hand. Preparations said to be "just as good" or "about the same thing," but always "a little cheaper," attest the wide-spread and growing popularity of fluid Hydrastis. All such, compared with the latter as to physical appearance or as representatives of the drug, are *condemned*; dispensed in prescriptions, they are *readily detected* tested therapeutically, they are *promptly rejected* as unworthy of confidence.

Fluid Hydrastis is applicable to the treatment of all irritable, inflammatory and ulcerative conditions of the mucous tract.

This statement of a well-known medical author and journalist has become axiomatic:

"No remedy for physician's use has been received with such universal approval."

Solution Bismuth and Hydrastia—MERRELL.

An invaluable and scientific combination, wherein the beneficial action of the white alkaloid is increased by association with Bismuth. This solution contains $2\frac{1}{2}$ grains of the double Citrate Bismuth and Hydrastia, twenty-five per cent of which is Hydrastia Citrate.

The cordial reception accorded this preparation marks it as the most valuable preparation in the market in which the white alkaloid alone represents the valuable properties of the drug. Used in diseases of the nasal passages, of the eye, of the throat, of the stomach and intestines, of the reproductive organs and bladder, it is equally beneficial.

Colorless Solution of Hydrastia—MERRELL.

This is a permanent solution of the white alkaloid, without the addition of any other medicinal agent to modify or increase its action. It is offered without special recommendation to meet the views of a limited number of physicians, with whom the color of the Fluid Hydrastis is an objection. This solution contains in one fluid pint the same proportionate strength of white alkaloid as exists in an average quality of crude root.

See notes above on solution Bismuth and Hydrastia.

"Merrell's Hydrastis Preparations" are for sale by Wholesale Druggists throughout the United States. Please specify "Wm. S. M. Chem. Co." in ordering or prescribing.

The Wm. S. Merrell Chemical Co.,
CINCINNATI.

AUTENRIETH'S NEW DOUBLE RECTUM SPECULUM

SEND FOR DESCRIPTIVE CIRCULARS.



Fig. 1.

AUTENRIETH'S NEW CLUB - FOOT SHOE.

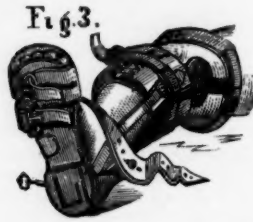


Fig. 3.

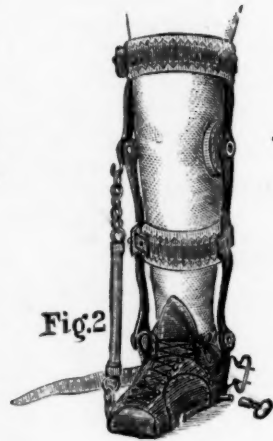
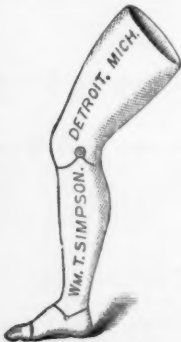


Fig. 2.

WM. AUTENRIETH, Manufacturer of Surgical and Dental Instruments,
NO. 71 WEST SIXTH STREET, Between Walnut and Vine, CINCINNATI, O.
Special Attention Given to Fitting Trusses and Apparatus for Deformities.
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DETROIT, MICH.

In writing mention whether Artificial Arm or Leg is wanted.

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ESTABLISHED 1826.

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JEWETT'S ASEPTIC OBSTETRICAL FORCEPS.

THE VALUE OF MURDOCK'S LIQUID FOOD

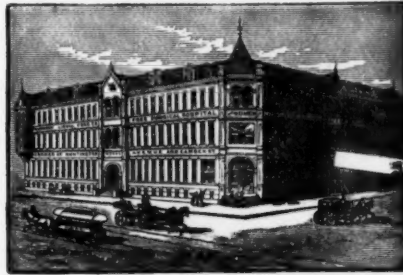
*Is Recognized in all Countries, and is Indorsed by all National Medical Societies
that have Investigated its Value.*

There never was an essay read before any Medical Society on Raw Food Extracts, except on Murdock's Liquid Food, and counterfeit manufacturers of Extracts have published many of our essays to show the value of their counterfeits.

Send for Essay and Discussion before the British Medical Association at Brighton, England, 1886 (Essay, by the Vice-President of the American Medical Association and others on the value of Murdock's Liquid Food over all Foods and Extracts known, it being the Only Raw Condensed Food, free from insoluble matter.

Also essay read before the American Medical Association at Richmond, Virginia, and Washington, D. C.
Its value was recognized by the profession from results obtained in the Free Hospitals that have been established and supported by our Mr. A. L. Murdock during the last four years. They now equal

140 FREE BEDS,



and contains 28,000 feet of floor.

Our Liquid Food can be retained by the weakest stomach. Four tablespoonfuls daily will make eight per cent new blood weekly. When used for infants, never change their food, but add five or more drops of Liquid Food at each feeding, and their lost or needed vitality will be restored in less than thirty days.

Send for the report of the Chairman of the Section of Obstetrics of the American Institute of Homœopathy, read at Saratoga at the annual meeting of 1886.

Circulars were sent by him to all the physicians in the United States, asking what their experience was with Murdock's Liquid Food in its use for infants under, as well as over, one year old.

Then what results, with all the different Milk preparation, Grain Foods, Peptonoid Foods and Beef Extracts, compared with Murdock's Liquid Food.

The returns show that it is the standard food and extract, as the percentage of lives restored was the largest when used. We extract from the report. After calling attention to the fact that one-quarter of the homœopathic profession are accustomed frequently to prescribe this food for children less than a year old, as well as over, he remarks—

"It is singularly adapted to scrofulous, syphilitic and tubercular constitutions, its life-restoring power manifesting itself in each with a relative clearness and power corresponding to the order of enumeration. For fair-haired children who are inclined to grow fleshy it is more symptomatically recommended, while Duncan's acid babies find it particularly useful. Accordingly it is chiefly employed for marasmus and anemic conditions resulting either from non-assimilation of food or from simple summer complaints. Should a child vomit all milk food and suffer synchronously with diarrhoea or dysentery, the demand for this food is emphatic and unmistakable; also in general irritability of the stomach, particularly if there be sour smelling diarrhoea, the food passing through undigested. For the prematurely born it stands preeminent. 'For those weak and debilitated from any cause, Murdock's Food is probably the best in the world.' Should any indication of cerebral hyperæmia appear, the quantity of food must be diminished; so, too, if after its protracted use vomiting and diarrhoea ensue; the child has been overfed. Should the taste or odor of any given bottle chance to be disagreeable, add water until they disappear, and let the purchaser congratulate himself upon getting more nutriment than he paid for. When given in combination with milk in cases of indigestion, the quantity of milk should be diminished until all curds disappear from the stool, the quantity of Food, of course, being proportionately increased."

The surgical staff at Murdock's Free Hospital for Women are in daily attendance, except Saturdays, to examine patients and assign beds. **EVERY BED FREE.**

Our Free Surgical Hospital for Women, located on Huntington avenue, above West Chester park, contains fifty (50) beds, in charge of a staff of five surgeons, members of the Massachusetts Medical Society.

Our Free Surgical Hospital for Women, located on Gainsborough street, corner of Huntington avenue, contains 20 beds, in charge of a staff of five surgeons, members of the Massachusetts Homœopathic Medical Society.

Our Free Home for Homeless Boys contains 40 beds, and is located at 11 to 21 Causeway street. Many of these boys suffer from Scrofula, Eczema and other skin diseases, which yield quickly by the use of our Liquid Food.

From the fact that no two beeves or sheep are alike is the reason of our different brands being different in flavor.

All brands are made by the same formula. The letter represents the day of make, and the figure the tank.

If richer, it is stronger in smell and flavor, and will bear a greater reduction. It cannot be reduced so low but will be superior to all other preparations in treating chronic cases.

If you cannot obtain Murdock's Liquid Food from your druggist, we deliver, free of express, 12 oz. for \$1. Any physician that has not used our Liquid Food, we will deliver free to the Boston express, 12 oz.

MURDOCK'S LIQUID FOOD CO. BOSTON,

In writing please mention this journal.

Labor, Ancient and Modern.

This rare and valuable work shows an immense amount of research into the subject of which it treats, and is certainly the *most valuable contribution to Obstetric Science* that has been made during the present century. Combining patient, archæological inquiry with the enlightened views of modern surgery, this book should have a place in the library of every physician and antiquary throughout the length and breadth of the civilized world. It is one of the few works that supply a long felt want, and will prove of an immense advantage to the scientific world.

The *Illustrations* portray characteristic customs and posture in labor scenes amongst the people of all nations, from the ancient Greek and Roman to those of the American Indian and Negro.

Some of these illustrations of labor scenes amongst the Kiowa, Brule and Ogallala Sioux, Navajo, Comanche Indians, the Japanese, etc., are from drawings by native artists.

The comparative developments of Obstetric Science show the immense advancement of some of these rude races, and also prove the value of their expedients resorted to in protracted labor; which though but newly discovered amongst enlightened surgeons, have long been practiced by them.

In speaking of and comparing this work with all others on this subject, we call attention to the extract from the London Lancet, as well as to other notices, which appear below:

EXTRACTS FROM THE PRESS.

(London Lancet.)

"The most interesting, as well as the most laborious of all is that by Dr. Engelmann, who gives 'An Ethnological Study of Posture in Labor,' illustrated by a profusion of beautiful and graphic illustrations, which must always take high rank in the literature of this most interesting question."

(St. Louis Courier of Medicine.)

"The volume entitled, 'A Posture in Labor; An Ethnological Study,' is the result of a great deal of careful investigation and painstaking research. Published in elegant style and beautiful mechanical execution."

(Obstetric Gazette, N. Y.)

"An exhaustive discussion of the entire subject, illustrated by a large number of well-executed drawings, * * most interesting and valuable contribution."

(American Journal Medical Science, Philadelphia.)

"Curious and interesting volume, fully illustrated, bearing evidence of the persevering industry of its author, who has searched the world over to obtain his material. The volume under review contains 56 cuts and is made up of facts drawn from 9 European Countries; 16 Asiatic; 14 African, and from North, South and Central America; Australia, and the South-Sea Islands, and is especially interesting as an exhibit of the peculiar parturient customs of many of our Indian Tribes."

(Philadelphia Medical Times.)

"Written to some purpose. The rarest volume is undoubtedly Dr. Engelmann's exhaustive study of 'Posture in Labor,' illustrated with 56 wood-cuts. A careful perusal of it will, we trust, lead every one to modify somewhat pre-existing opinions as to what is the canon law of the lying-in room, and perhaps hereafter in difficult or rather in prolonged labor a remembrance may lead the accoucheur to abandon old notions and go back to those still older with relief to himself and still more to his patient."

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Three Awards, International Exhibition, Philadelphia, 1876.

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Two Awards, World's Exposition, New Orleans, 1884-5.

OLEATES.

This class of remedies is gaining favor with Physicians as a substitute for ointments on account of greater penetration, freedom from rancidity, ease of application, greater cleanliness, and as covering a wider range of usefulness.

We were among the first to make and introduce them to the profession. As the demand for them has increased, we have also increased our facilities for their production. Below are named those we are manufacturing; the list will be increased as the needs for others become manifest.

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Oleate of Aconitia, 2%.

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Ditto Precip.:

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Ditto Precip.:

Oleate of Mercury, 5, 10 and 20%.

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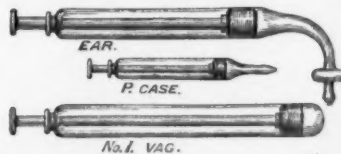
Oleate of Zinc, 10%.

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Beware of Imitations! Each and every syringe made by me bears a red label distinctly marked "P. J. McElroy, East Cambridge, Mass."

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*Improved Spinal and Abdominal Cor-
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No Instrument has ever been placed before the Medical Profession which has given such Universal Satisfaction.

This invaluable instrument is preferred by gynecologists because, 1, it keeps the uterus out of the vaginal canal; 2, it produces no pressure against parts unaccustomed to pressure; 3, it does not distend the vagina; 4, it is adaptable to any case; 5, it can be removed and replaced by the patient. In brief, it affords "ASSISTANCE WITHOUT INTERFERENCE."

UNION OF EXTERNAL AND INTERNAL SUPPORT.—The abdomen is held up by the broad morocco leather belt with concave front and elastic straps to buckle around the hips. The Uterine Supporter is a cup and stem made of highly polished hard rubber, very light and durable, shaped to fit the neck of the womb, with opening for the secretions to pass out, as shown by the cuts. The cup is fastened to the belt by elastic cords which adapt themselves to all the varying positions of the body without changing the location of the cup.



Our Reduced Price to Physicians, \$5.00.

Anteversion. Prolapsus. Retroversion.

Instruments sent by mail at our risk, on receipt of price; or we can send by express, C. O. C., and collect return express on the money.

CAUTION.—Worthless imitations of our Supporter are on the market. To protect our patrons from imposture, we stamp each pad of the Abdominal belt in gilt letters, "Dr. McIntosh N. U. Supporter. Chicago, Ill.," the base of each cup is stamped "Dr. McIntosh N. U. S. Co., Chicago, Ill., U. S. A."

The box in which the instrument is put up contains directions for the application of the instrument pasted inside the cover, having the fac simile signature of Dr. L. D. McIntosh.

For further information in regard to the instrument, address

Dr. McIntosh Natural Uterine Supporter Co.,

300 AND 302 DEARBORN STREET, CHICAGO, ILL.

Our valuable Pamphlet on "Displacement of the Womb," giving a more complete description of the Instrument, will be sent you free on application.



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MANUFACTURERS OF THE CELEBRATED

McIntosh Combined Galvanic and Faradic Batteries,

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AWARDED GOLD MEDALS IN BOTH ELECTRICAL AND OPTICAL DEPARTMENTS AT THE NEW ORLEANS EXPOSITION, 1884-1885.

We would call the Special Attention of the Medical Profession to our *Combined Galvanic and Faradic Batteries*. These batteries have been adopted by the United States Government, for use in Medical Department of the Army and Navy. They are the *First and Only Portable Batteries ever invented which Give Both the Galvanic and Faradic Current*. TWO DISTINCT BATTERIES IN ONE CASE. No Physician can afford to be without one.

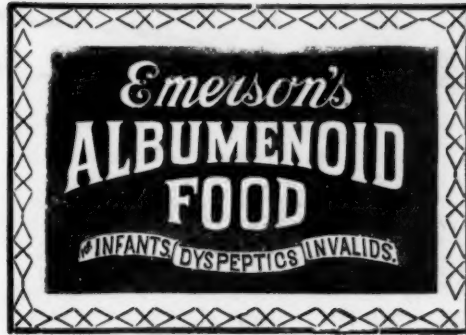
This Celebrated Battery is constructed on an improved plan. The zincs and carbons are fastened to hard rubber plates in sections of six each, this manner of connecting brings the plates nearer together than in any other battery, thus giving less internal resistance. The cells are composed of one piece of hard rubber, and are made in sections of six each with a drip-cup, thus one section can be handled, emptied and cleaned as easily and quickly as one cell. This is the only battery in which the zinc and carbon plates can be kept clean and always in order by simply rinsing them. All the metal work is finely-nickel-plated and highly polished, and every part is put together so that it can be easily replaced by the operator. Our batteries weigh less, occupy less space, give a current of greater intensity and quantity than any other battery manufactured.

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The following analysis shows that this Food is compounded in accordance with the highest authorities in physiological chemistry.

—ANALYSIS—

	PER CENT.
Water	5.50
Ash (containing 1.39 per cent. Bone Phosphate of lime)	2.32
TOTAL ALBUMENOIDS	19.25
Fat	5.49
Sugar	41.67
Starch, Gelatinized,	25.77

The average amount of Albumenoids is 20 per cent. which is obtained from **Egg ALBUMEN**

This food is not treated with pepsin, pancreatin or digestive ferment of any kind. It contains **NO DRUG, MEDICINE, STIMULANT** or artificial aid to digestion.

The benefits obtained by the use of this Food in cases of **MALNUTRITION, GASTRITIS, DYSPEPSIA, MARASMUS and CHOLERA INFANTUM** are wonderful.

It has met with the *heartly endorsement* and approval of the Medical Profession.

Physicians who not have examined this Food and tested its merit are invited to send for samples and testimonials given *voluntarily* by many members of the medical fraternity.

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THE ONLY PREPARATION OF NORWEGIAN COD LIVER OIL WHICH CONTAINS
70 PER CENT. OF OIL IN A DIGESTED FORM.

FORMULA OF OLEO-CHYLE.

PEPTONIZED COD LIVER OIL.....85 Min.
PANCREATINE.....2 Grs.
WATER.....25 Min.

OLEIC HYPOPHOSPHITES.....5 Grs.
SODIUM HYOCOLATE..... $\frac{3}{4}$ Grs.
MIX.

DOSE: Two teaspoonfuls thrice daily at meal times.—It is preferable to take *Oleo-Chyle* in milk.

OLEO-CHYLE is NOT AN EMULSION, neither is it a simple admixture of Cod Liver Oil with Pepsin and Pancreatine; it is **Pure Norwegian Cod Liver Oil, perfectly digested with both Pepsin and Pancreatine** in exactly the same manner and consuming about the same length of time under the same conditions as to temperature, etc., as oil would be subjected to by the human stomach and duodenum before being presented to the lacteals for absorption into the blood.

OLEO-CHYLE contains no gum, sugar, glycerine, Irish moss or any viscid substance whatever to hold the oil in suspension as in all artificial Emulsions, (with all of these ingredients **Oleo-Chyle** is incompatible.)

In the preparation of **OLEO-CHYLE** we use none but the

Pure "Lafoten" Norwegian Cod Liver Oil,

manufactured on the Island of Lafoten, Norway, and imported by ourselves direct, thus avoiding the liability of adulteration while in the hands of Cod Liver Oil Dealers in London or Hamburg. We therefore guarantee its purity.

This Oil is by far the richest in IODINE and all FAT PRODUCING and LIFE SUSTAINING qualities as well as the most pleasant to the taste.

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Med. Ex. Provident Life Ass. Society.

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